

THE IRON AGE

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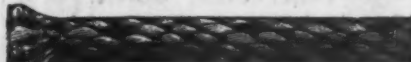


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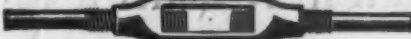
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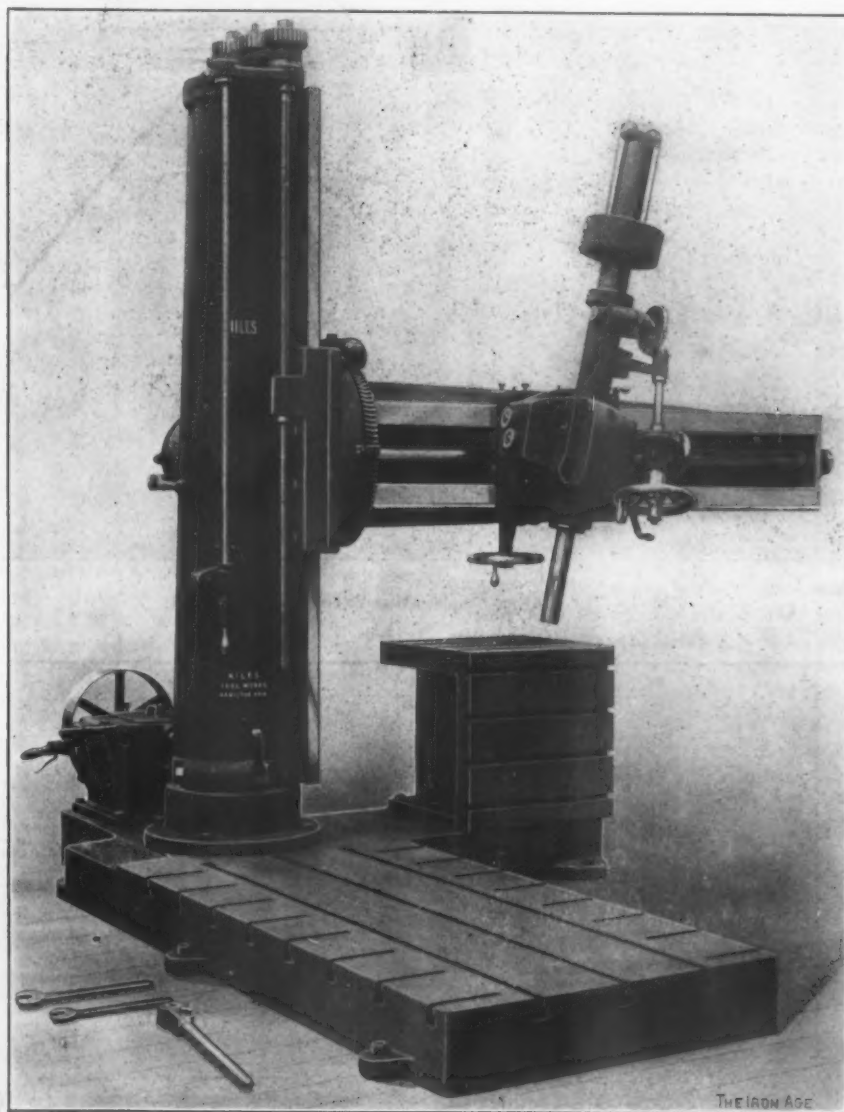
THE IRON AGE

New York, Thursday, July 27, 1905.

New Niles Six-Foot Universal Radial Drill.

The machine herewith illustrated, built by the Niles Tool Works, Hamilton, Ohio, is in a measure a composite design of the several works of the Niles-Bement-Pond Company, being based on their combined experience in the design and manufacture of radial drilling machines. It is built to use high speed drills to their fullest capacity and is principally noteworthy for its conven-

The machine is adapted for use with either carbon or high speed drills, the range of spindle speeds being sufficient for this purpose. Friction clutches are used for starting and stopping the machine at high speeds, so as to prevent shock and consequent wear. The speed box is planed on the top, in order that the drill may be easily changed from a belt driven machine to a motor driven machine by the simple substitution of two gears for the pulley. Reversing gears for tapping are provided. All



New 6-Foot Universal Radial Drilling Machine of the Niles-Bement-Pond Company, New York City.

ience and ease of manipulation. The drill head saddle fits between as well as outside of the arm guides and forms the fourth side, completing the box section of the arm, which insures great rigidity. The column saddle is strongly gibbed to flat scraped bearings on the column, and the post about which the column revolves extends to the extreme top of the sleeve. The column rests on ball bearings. The use of large shafts, steel gears, bronze bushings and ring oiling bronze bearings for all fast running shafts makes it a strong, durable machine capable of standing the hardest service. All the feeds and speeds are changed by means of levers, and great care has been taken to arrange the levers and hand wheels so that they shall be within easy reach of the operator. The simple, compact design of the machine is well brought out in the accompanying half-tone.

speeds and feeds may be changed while the machine is running at its highest speeds.

The radial drill is a full universal machine—that is, both the arm and the spindle swivel. The more important dimensions of the machine are as follows:

	Inches.
Maximum distance from face of column to center of drill.	77½
Least distance from face of column to center of drill.	22½
Greatest distance from spindle to base plate.	72
Traverse of spindle.	20

It is to be noted that there are no belts other than the driving belt (none at all when the machine is directly driven by a motor) and that all of the gears in the speed changing mechanism and on the spindle saddle are inclosed. All of the working parts are well protected from dirt or accidental blows and danger of injuring the workmen.

The Flather Combination Open Side Planer.

For the manufacture of frogs, switches and crossings it is frequently necessary to use an open side planer, but for regular work of this description the frog and switch type of planer is more desirable. The planer shown in the illustrations, built by the Mark Flather Planer Company, Nashua, N. H., is designed to combine the two forms of planer to meet all requirements of this class of

ing fitted over the cheek, where it is held in position by steel taper wedges. The cross rail is made to project above and below, and the projections serve as supports, being fitted over the face of the housing and properly gibbed, while an adjustable support is provided from the rear of the far side and center of the cross rail to a bearing on the inside of the housing. These bearings are tongued in position and made to fit, permitting no spring.

The cross rail is raised and lowered by a large

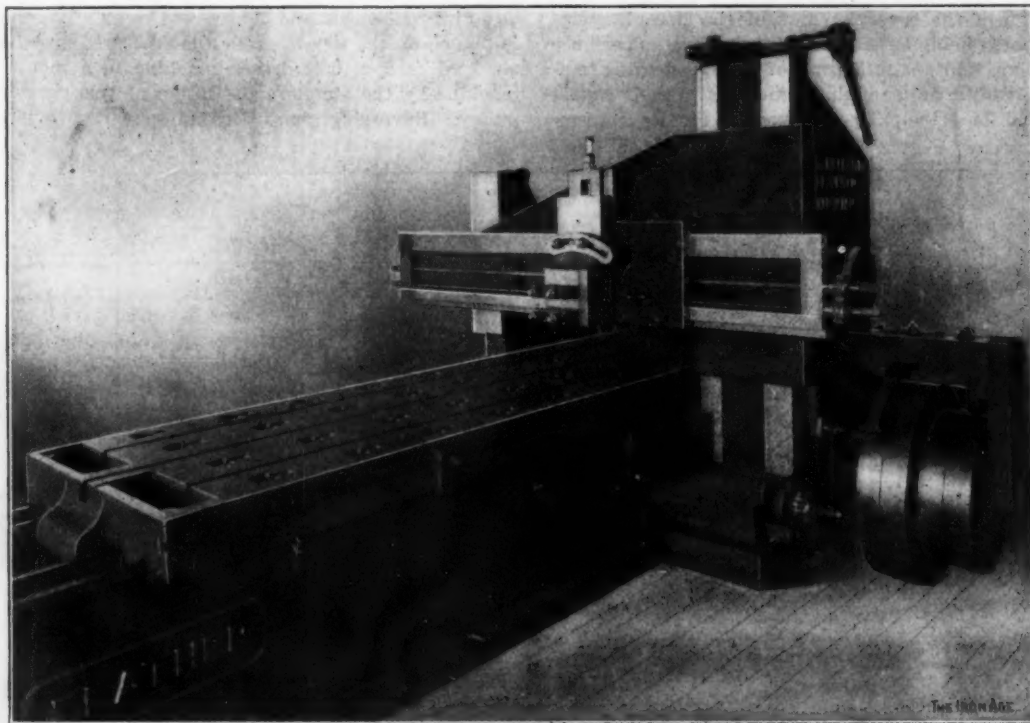


Fig. 1.—The Flather Combination Open Side Planer.

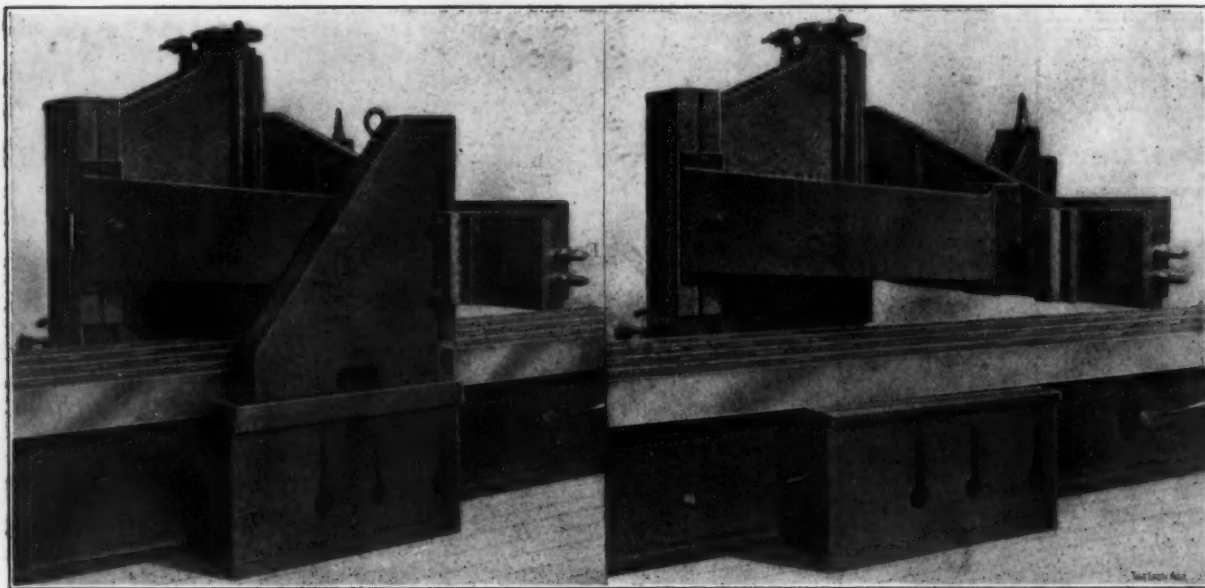


Fig. 2.—A View from the Rear Side with the Auxiliary Support in Use.

Fig. 3.—A Rear View of the Planer Arranged for Open Side Work.

work. A general view of the machine from the working side is given in Fig. 1, and Figs. 2 and 3 show the cross rail from the rear, with and without the outboard support.

The machine has one main housing, made much larger than is ordinarily included in the design of a frog planer to withstand the great strain put upon it when the planer is used for open side work. The housing is thoroughly ribbed and supported in every direction, and is bolted to the sides and top of the cheek as well as be-

double square thread screw, actuated by spiral gears and a ratchet wrench on the top of the housing. The rear cheek of the bed is made wide enough to serve as a bearing for the removable rear housing, which is tongued into a slot in the cheek of the bed. The auxiliary housing is easily removed when regular open side planer work is to be done.

The head on the cross rail is the regular Flather frog and switch head, with long bearing and without swivel. The head is so made that when two are used on the cross

rail the tools may be brought to within a small distance of one another. Friction driven power cross and vertical feeds are provided. The strongest feasible gearing is employed, and all gears are contained inside the bed in a special compartment. The gears and racks are always accessible and the bed is bored out for all bearings.

Canada's Industrial Advance.

A Marked Increase in Incorporations.

TORONTO, ONT., July 24, 1905.—One of the features of Canada's present rapid development is the multiplication of new joint stock companies to engage in manufacturing and in construction work on a large scale. The charter granting powers of both the Dominion Government and the several Provincial Governments have been exercised more freely than at any time since the days of the mining fever. Much more substantial, however, is the brood of new companies than was that which sprang from the gold deposits of the Kootenays in British Columbia and of the Rainy River district in New Ontario. Mining enterprise is by no means a spent impulse. As was pointed out in these columns some time ago there has been a marked revival of activity in the silver lead mines of Southern British Columbia and in the gold properties now associated together with the War Eagle as their center. In the Temiskaming region of New Ontario there has been a real outburst of mining enthusiasm. Valuable deposits have been discovered there, the occurrence of large quantities of cobalt ores being the chief feature to note.

Cobalt Camp.

A new town has struck its roots down among the ores of the Temiskaming mining division. This is Cobalt, called after the mineral found in greatest abundance there. The veins run from $\frac{1}{2}$ inch to 16 inches in width, and are not less remarkable for the high grade of their content than for their wide diffusion. The natural combination of minerals met there is said by metallurgists to be unique. Nowhere else in America has the same combination been found. Nicotite, smaltite, erythrite and cloanthite are associated. The occurrence of nickel with cobalt, as here found, is said to be rare, and the large silver constituent is stated to be still more uncommon in cobalt. The ore is valued in some cases at \$1500 a ton. It is all shipped to Camden, N. J., for treatment. The young town of Cobalt is on the line of the Provincial Government's Temiskaming & Northern Ontario Railway. If the camp is as rich as some competent observers of sober judgment are inclined to think it is the new mining center will be a very important factor in the progress of Ontario.

New Industries.

Of new companies organized and incorporated to carry on industrial operations a few may be referred to as typical of the present day creations.

Letters patent have been issued to the Power & Gas Machine Company, with a capital of \$100,000. A large building site has been purchased in Galt, and plans have been prepared for the construction of works. Gas engines and gas generators will be manufactured.

The Dominion Bridge Company of Montreal is said to be contemplating the erection of branch works in Winnipeg. The great railway expansion and reconstruction in the West offers a large business to the bridge building industry.

The Canadian Pacific Railway is double tracking its road from Winnipeg to Fort William; the Canadian Northern is continuing its line across Canada, and the Grand Trunk Pacific is about to call for bids for the construction of its Lake Superior branch.

The Western Counties Electric Company has been incorporated with a capital of \$500,000. It is to distribute electric power, &c., its main business being supposed to be the operation of transmission lines in the Niagara district, where two producing companies are now developing electricity on a large scale on the Canadian bank—the Canadian Niagara Power Company and the Ontario Power Company. A year hence the Electrical Develop-

ment Company's big plant is expected to be producing power. Such a quantity of energy will make business for transmission lines and promoters of industries.

The Kaministiquia Power Company, with a capital of \$2,000,000, has been incorporated to utilize a power site on the Kaministiquia River, near Port Arthur.

The Merralls Engineering Company, with a capital of \$100,000, has been incorporated to manufacture machinery for mining, milling and other purposes. Its head office is to be in Toronto.

The Concrete Pole Company, with a capital of \$100,000, head office Toronto, has been incorporated.

The Ingersoll Nut Company, head office Toronto, capital \$25,000, has been incorporated.

Letters patent have been issued by the Ontario Government enabling the Raymond Mfg. Company of Guelph, Ont., to increase its capital from \$130,000 to \$250,000.

The Johnson Engine Company, with a capital of \$250,000, is incorporated. Its head office is in Toronto.

Authority has been given the Concrete, Steel & Tile Construction Company to do a general engineering and construction business. The company was incorporated under the laws of the State of Michigan. In Ontario its operations are to be limited to a \$20,000 capital.

Another corporation licensed to do business in Ontario is the New Ontario Iron Company, which holds a charter from Maine. Its capital is \$100,000.

The Capewell Horse Nail Company of Connecticut has been licensed to utilize \$40,000 in Ontario; the American Radiator Company of New Jersey, \$50,000; the Ajax Production Company of Delaware, \$40,000.

Shipbuilding at Sydney.

The Sydney City Council has decided to grant a free site to the company organized to build steel ships there. A portion of Victoria Park will be granted for the purpose. It now appears certain that the negotiations which have been proceeding intermittently for some years will end in the erection of a great plant. Connected with the enterprise, as its leading promoters, are Horace Mayhew and W. L. Gladstone, with whom are associated the Cape Breton Coal, Iron & Railway Company. Victoria Park, the property in which the site is to be given, is a military reserve, belonging to the Dominion Government. The report of the special committee of the council, which had charge of the matter, recommended exemption from taxation for 20 years. The Mayor states the plant will cost from \$12,000,000 to \$13,000,000 and will be established as a branch of a company now operating in England, with a branch in India.

C. A. C. J.

Peat gas as a source of power is being considered by European engineers. A great difficulty to be met is the rapid formation of tar, which has to be separated and carries away a large percentage of the heat which would otherwise be available. Tests in a Deutz producer plant showed that with peat containing 16.5 per cent. moisture the fuel used was 2.8 pounds per horse-power hour. In a Koerting producer the fuel per horse-power hour varied from 6.2 pounds when the heating value was 2250 British thermal units, to as low as 1.65 pounds when the calorific value reached 9000 units. In the same cases, when used to produce gas utilized in a gas engine, fuel of a value of 6300 units showed an economy of 33 per cent. over the results from a steam engine using the same fuel.

On the assumption that coal costing \$2.50 per ton has a calorific value of 14,000 British thermal units per pound, \$1 will buy 11,200,000 British thermal units, according to the *Electrical Review*. The heat equivalent of one electrical horse-power year is 22,400,000 British thermal units on a 24-hour day. Were there no losses and were coal the only cost to be met it is evident that one electrical horse-power year could be produced for \$2. As a matter of fact, the usually accepted cost of such an amount of power is \$50. On this basis only 448,000 British thermal units may be purchased for \$1, and the total efficiency of conversion, commercially, is only 4 per cent.

A Combined Baby Bessemer and Open Hearth Steel Foundry.*

In spite of the fact that the open hearth furnace is not well adapted to the production of castings on a small scale, the substitution of a miniature Bessemer converter for the purpose has hitherto met with but little success. The chief difficulty in blowing small charges is to obtain steel at a sufficiently high temperature. The first experiments were made by Robert, who forced air into the metal from the side, and Tropenas, who blew on the surface of the bath. In both cases the variation from the usual practice was for the purpose of obtaining a less violent agitation of the metal. Walrand's converter, on the contrary, differed from that of Bessemer only in size, the bottom tuyeres being retained. His process was worked with heats of from 800 to 1600 pounds, while the two inventors mentioned above never went below 1 ton. In order to maintain a sufficiently high temperature after the combustion of the carbon Walrand added 5 to 10 per cent. ferrosilicon at that period, and blew about another minute before finishing the charge with ferromanganese in the usual manner. A disadvantage of this process is that, on account of the small quantity of metal and consequent rapid solidification, there is great liability to flaws, due to the gases being unable to escape.

A considerable step in advance is represented by the new plant of Otto Gruson, near Magdeburg, but before this is described it will be advisable to look into general conditions. The baby Bessemer process may be developed along three distinct lines, viz:

1. As an independent steel foundry.
2. In connection with an iron foundry.
3. In conjunction with open hearth furnaces.

An Independent Bessemer Foundry.

In 1897 a plant of this description was erected in Chemnitz from plans of Tropenas. There were made on an average six or seven heats daily of from 2400 to 3000 pounds each. For large pieces two heats were combined. The silico-spiegel and ferromanganese were at first added in a molten condition, but were later used in the solid state. Careful analyses were made, this procedure being found indispensable.

A plant of this description has the advantage that the operating expense diminishes very slightly when the output is below the full capacity. At Chemnitz a remedy was found by using such iron as was not needed for conversion into steel for the production of gray iron castings of special quality, by a process developed by Mr. Zenzes, the manager. Bars cast in sand and cooled slowly from metal of the following composition—carbon, 3 to 3.4; silicon, 1.5; manganese, 1.0; phosphorus, 0.1; sulphur, 0.07; copper, 0.1—show a tensile strength of 28,000 pounds per square inch. Zenzes' process changes the composition so that the carbon is less than 3 per cent. and the silicon over 1.5, and increases the tensile strength from 28,000 to 42,000 pounds. For this purpose the iron is blown in the converter until the silicon and manganese are almost completely oxidized and so much of the carbon removed that an entirely white fracture would show if solidification took place. An addition of 100 to 200 per cent. of molten high silicon iron is then made, and the resultant metal when cold is a gray iron, with 1.5 per cent. of silicon and less than 3 per cent. carbon.

Combined Baby Bessemer and Gray Iron Foundry.

The difficulty of using the baby Bessemer process when making nothing but steel castings has been explained, and the use of Zenzes' or any similar variation gives only partial relief. It would seem more practical to operate the process in connection with a gray iron foundry, and a plant for this method of working has been installed near Leipzig. There were already on hand two cupolas of 4 and 5 tons hourly capacity, which were used on alternate days for the production of iron castings. The converters were erected close at hand in order to use

the molten metal after the iron castings had been poured. The cupola charge consisted of 75 to 85 per cent. pig iron and 15 to 25 per cent. steel scrap, while the coke consumption amounted to 10 to 12 per cent. For conversion an iron with 2 to 2.5 per cent. silicon was used, with a blast pressure of 5 pounds per square inch, while the heats were finished in the usual manner. The following table shows results obtained with heats of 1 ton:

Heat No.	Time of heat. Minutes.	Ferrosilicon and ferromanganese.		Analyses of product.		
		Molten. Pounds.	Solid. Pounds.	Carbon.	Silicon.	Manganese.
1.....	15	53	..	0.21	0.19	0.48
2.....	15	53	..	0.18	0.18	0.55
3.....	16	55	..	0.18	0.14	0.50
4.....	16	55	..	..	..	0.62
5.....	13	53	..	..	..	..
6.....	15	..	51	0.23	0.20	0.70
7.....	12	..	51	0.20	0.22	0.75
8.....	17	53	..	0.19	0.25	0.65
9.....	14	..	51	0.21	0.20	0.64
10.....	15	55	..	..	..	..
11.....	15	..	..	..	..	..
12.....	13	..	53	..	..	..

The steel thus obtained may be used for castings, either by itself or mixed with gray iron. This method of

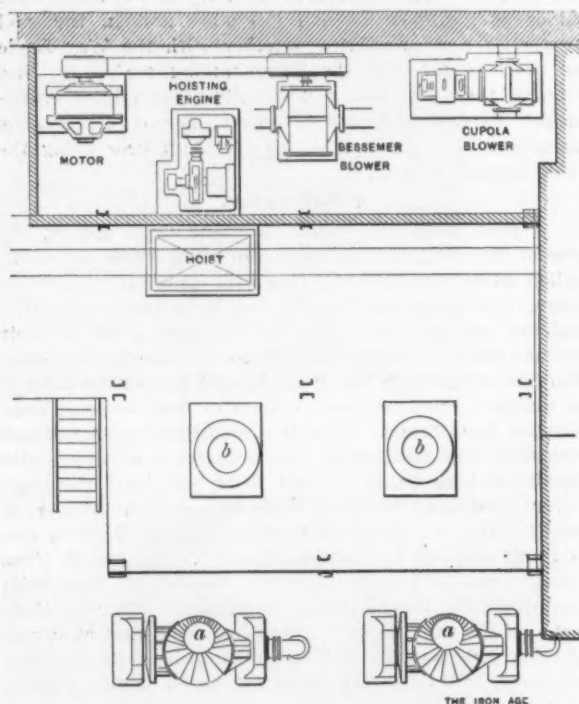


Fig. 1.—Plan of Baby Bessemer Works.

working is not economical, however, and can only be recommended in special cases.

Baby Bessemer Combined with Open Hearth.

The plant for this method of working was put into operation by the firm of Otto Gruson & Co., in Magdeburg, in 1904, and is described below. The metal for castings was made in two acid open hearth furnaces, one of which is always in operation, making four heats of 7 to 8 tons each every 24 hours. The output being insufficient and as there was not enough business to keep a third furnace permanently in operation, two small converters were installed. One of these, if necessary, can furnish in 24 hours 10 to 15 heats of approximately 1 ton each. This is only possible by means of rapid melting, as it is necessary for the iron to be very fluid.

The converters are located between the two open hearth furnaces. Figs. 1, 2 and 3 show the general arrangement of the converting plant, *a a* being the converters and *b b* the cupolas. The distance from center to center of cupolas is 12.14 feet, that from center to center of the converters 15.59 feet. The inside diameters of the cupolas are: Top, 2.46 feet; bosh, 2.13 feet; hearth, 2.62 feet, while the total height is 24.6 feet. Two kinds of iron are used, the analyses being as follows:

* From a paper by Prof. Hermann Wedding in *Verhandlungen des V. zur Beförderung des Gewerbfleisses*.

	1. Per cent.	2. Per cent.
Silicon	1.5 to 2.5	2.5 to 3.5
Manganese	0.7	1.0 to 1.12
Phosphorus	0.04	0.04
Sulphur	0.06	Trace.

These are mixed according to analysis, so as to obtain a molten metal with 2 per cent. silicon. For this pur-

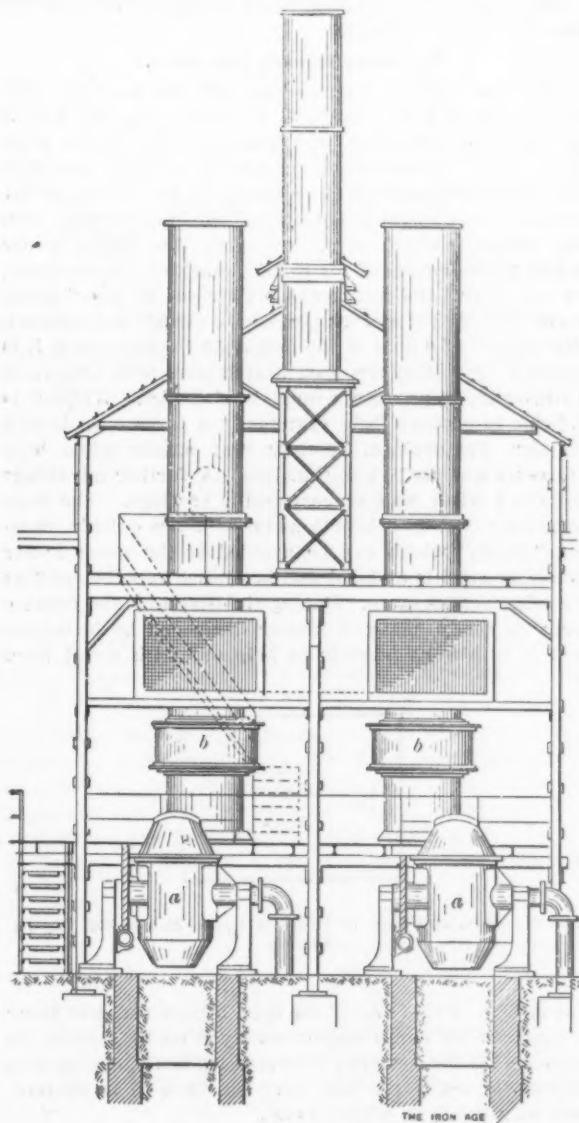


Fig. 2.—Front Elevation of Bessemer Plant.

pose it is found necessary to figure on 2.8 per cent., so that 0.8 per cent. is lost in melting. The charge for each heat is 2200 pounds. The pig iron is put into the cupola in charges of 440 pounds each, with 10 per cent. of coke. For heating the cupola 880 pounds of coke are used, and for fluxing the ash, limestone to the amount of one-third the weight of the coke.

A converter is located in front of each cupola and receives the molten metal through a trough. These vessels are shown in elevation and plan in Figs. 4 and 5, respectively. It will be observed that the converter at the tuyere level is not circular in shape, the general diameter of 30 inches being reduced to 27.5 inches between the tuyeres and the opposite wall. The tuyeres are the most important feature. They are arranged in two rows of six parallel holes each. Those in the upper row are 1.4 inches wide and 0.6 inch high, while the lower ones are circular, with 1.4 inches diameter. The arrangement of the tuyere blocks is shown in Fig. 6. The length of these blocks is the same as the thickness of the lining, 13.77 inches. The internal height of the lower wind box is 11.8 inches, that of the upper 4.7 inches, while both have the same diameter, 27.5 inches. Each tuyere block is therefore approximately 4.6 inches wide. The lower row of tuyeres is 19.68 inches above the bottom of the converter.

A separate connection is made between each wind box and the blast pipe, and at the junction of the two there is a three-way valve so that either or both wind boxes can be used. The covers are secured by clamps and wedges, as shown, in order that they may be quickly taken off.

The converter is provided with a pointer which moves over a graduated segment. When in a horizontal position the pointer is at zero when the contents of the vessel are 2200 pounds, while each division of the scale indicates 440 pounds more or less. Fig. 7 shows the various positions of the converter. When the converter is exactly vertical and the amount of the charge is correct, so that the pointer is at zero, the blast passes horizontally over the bath. Each graduation of 1 cm. over zero shows that there is 110 pounds too much metal; each graduation under zero shows an equivalent deficiency. An excess or deficiency of 110 pounds is allowed, but if more is shown metal is added or removed. The blower is driven electrically by a 100 horse-power motor, and is capable of delivering 2800 cubic feet a minute, which is more than required.

The Operation in Detail.

The method of operation is as follows: The charge having been put into the converter, the latter is turned up and the blast admitted through the lower row of tuyeres. A stream of gas and sparks is emitted from the throat. After two and one-half minutes a considerable flame appears, which, however, dies down until the fifth minute, when it reappears with increased brilliancy. This increases until about eight minutes from the start, when it has attained its maximum. According to the size of this flame, and generally in about five minutes, the upper row of tuyeres is turned on, which results in an active combustion of carbon monoxide within the converter, while at the same time the spectrum plainly shows first the sodium line and shortly after the manganese line in the green band. The admission of air through the

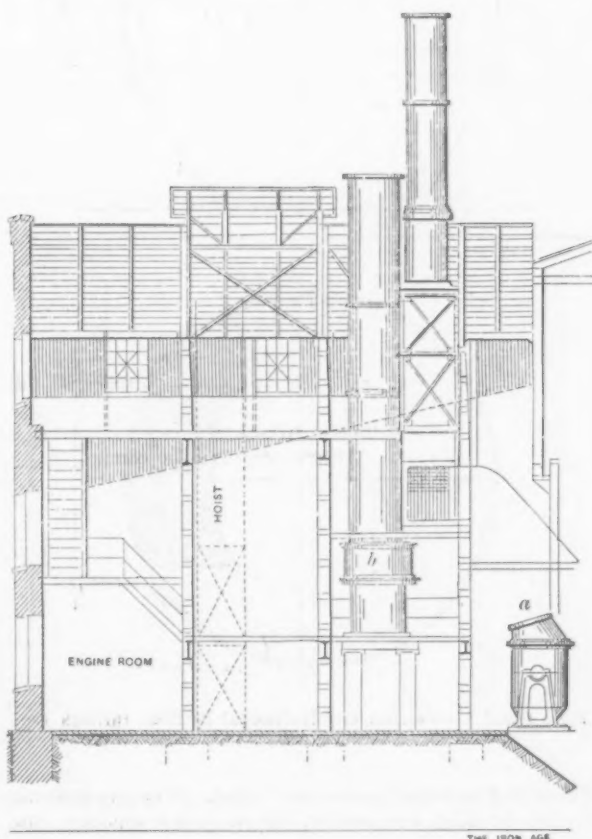
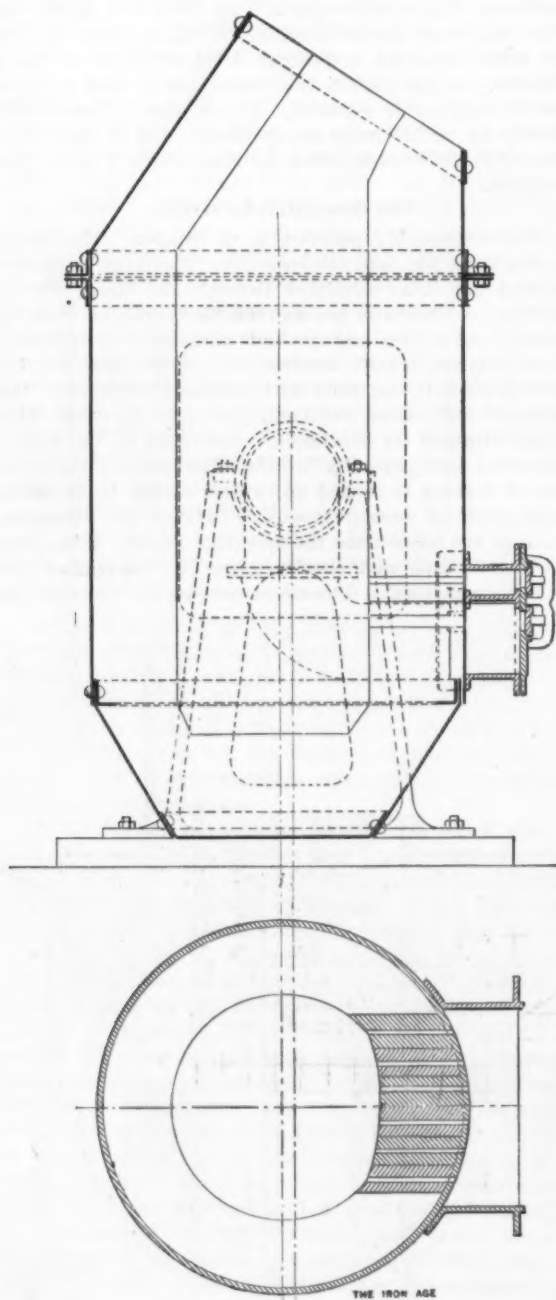


Fig. 3.—Side Elevation of Bessemer Plant.

upper tuyeres at the right moment is the most important point to be observed. At the moment of ignition the vessel emits thick fumes which consist principally of oxidized manganese, but which soon cease. If the reaction does not appear in eight minutes, which, however, it seldom fails to do, it is a sign that the heat is too low,

and ferrosilicon must be added. The boiling period, which as we have seen usually begins at the eighth minute, results in a long flame attaining its maximum at about the tenth minute. It decreases, however, after about another minute and then again increases until the thirteenth minute, when the greatest development is reached. At the fifteenth minute the operation is complete and the spectroscopist, which is in constant use, shows that the dark lines on the green band have disappeared. Fig. 8 shows the flame development and the corresponding chemical changes.

The converter having been turned down, the ferro-



Figs. 4 and 5.—Vertical and Horizontal Sections through the Tuyeres.

silicon and ferromanganese are added. Previous to being thrown in they are wetted, the moisture enabling the pieces to penetrate more easily the covering of slag. This addition causes the manganese lines in the spectrum to appear very plainly once more. After about 40 heats the nose of the vessel—and after 70 heats the line down to the tuyeres—require patching. After 210 heats the vessel is relined. As a rule, if the blowing time is 15 minutes, the whole operation of a heat takes half an hour, but some heats require 45 minutes, especially in a newly lined or newly patched converter.

Steel of widely varying grades is produced, the carbon ranging from 0.10 to 1.50 per cent., while the silicon is kept at 0.10 to 0.15 and the manganese at 0.12 to 0.18 per cent. The fluidity of the product is such that the smallest castings, such as automobile cylinders with walls only 0.15 inch in thickness, are made without difficulty. It is possible to make the higher carbons by catching them coming down, but recarburization is always used, as the results are more reliable.

The Open Hearth Furnaces.

An open hearth furnace can only be used to make comparatively heavy heats of a certain analysis, and is incapable of producing hard and soft steel at the same time. It is furthermore very difficult to obtain precisely the prescribed analysis on account of the action in the furnace if the metal is not tapped out immediately. Tilting furnaces, which would overcome this difficulty, are not to be recommended for small quantities. A converter, on the other hand, can make a different grade of metal every heat, and it is even possible to change the composition of part of a heat in the ladle. In the same way, it is possible, by mixing the open hearth steel with that from a converter, to produce a number of grades. While it is difficult to produce light castings in a large open hearth foundry, the problem becomes very simple when both processes are used in conjunction. A further advantage is gained when making very heavy castings. The comparatively cool open hearth metal solidifies quickly, causing "pipes," which can be avoided if the much hotter Bessemer steel is at hand and is poured into the mold as the other settles down. During the time that the furnace metal is ready many Bessemer heats can be blown, so that it is always possible to help out with metal from

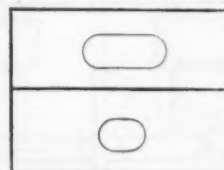


Fig. 6.—Showing Shape of Holes in Upper and Lower Tuyere Blocks.

this source. From one of the open hearth furnaces there is made in six hours approximately 6 tons. During the same period the converter produces ten heats, aggregating 10 tons, of which the last three can be used in conjunction with the open hearth metal.

The two open hearth furnaces at the Gruson Works could not produce the tonnage needed, and the question arose whether another furnace should be built. As the business would not have permitted its constant operation, the decision was made to erect a baby Bessemer plant, with the result that the increased tonnage is easily obtained. Another advantage is that the gates, sink heads and other scrap can be utilized in the furnace. The attempt to use the baby Bessemer process for the production of gray iron castings in conjunction with the cupola alone was unsuccessful, for the reasons shown above, and the conclusion was reached that the process would pay only when used in connection with the open hearth process.

The two furnaces at the Gruson plant are designed for heats of 9 gross tons, but in case of need will hold 13 tons. The hearth is 14.76 feet long, 5.9 feet wide in the center and 15¼ inches deep. The charge consists of 10 per cent. pig iron and 90 per cent. scrap. Four heats are made every 24 hours. A large percentage of the scrap is obtained from the heads, &c., of the Bessemer castings.

The special advantages of the combination here described, which have shown up in practice, are: First, elasticity of production, which can be increased or diminished according to the demand; second, the possibility of making conveniently all sizes of castings, from the lightest to the heaviest; third, facility of obtaining castings of any desired composition.

Methods of Molding.

The molds are made either in green sand, dry sand, clay mixed with graphite or clay alone. Large pieces or castings of a heavy section (over $\frac{3}{8}$ inch) or such as have to be machined all over cannot be cast in green sand. Such castings are always made in dried molds of clay and graphite when the castings are to be machined, or clay

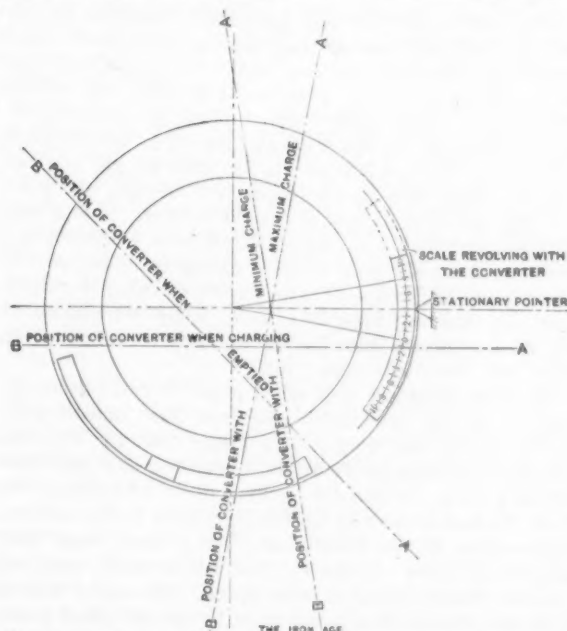


Fig. 7.—Various Positions of the Converter, Illustrating the Use of the Pointer.

alone when such is not the case. Thin pieces from $\frac{3}{8}$ down to $\frac{1}{8}$ inch are made in sand from Bessemer metal. Only for very thin pieces requiring no machine work is green sand used; for other work the old is superficially dried with a gas flame shortly before casting.

The making of dried molds for steel castings requires

mixture is laid around the pattern and the remaining space in the flask filled with old material through which the gas can escape easily. Whenever possible the molds are placed vertically for casting, a gate being formed at the top for adding metal as cooling takes place. Such castings as cannot be made vertical are inclined. Molds made as above are used for gears, locomotive parts and pieces for nickel plating.

Green sand molds are made from 50 per cent. sharp sand and 40 per cent. quartz sand, either with or without the addition of 10 per cent. dried clay. They are used for wheels, flat pieces and freight car fittings. In the semidried molds, made of 70 to 80 per cent. white quartz sand and 20 to 30 per cent. clay, dynamo bodies and machine parts are made. In some cases a binder, such as molasses, is added.

Most of the castings are annealed at temperatures ranging from 750 to 950 degrees C., the same being accurately determined by means of the Le Chatelier pyrometer.

Character of the Product.

The production of the Gruson Works averages 500 to 600 tons a month, of which 25 per cent. is made in the converter and the balance in the open hearth furnace. The bulk of the castings are made of one of the two grades below.

1. Steel with 64,000 pounds per square inch tensile strength, 20 to 25 per cent. elongation and the following composition: Carbon, 0.15 to 0.25 per cent.; manganese, 0.55 to 0.75 per cent.; silicon, 0.15 to 0.25 per cent. 2. Dynamo steel with 42,700 pounds per square inch tensile strength, little elongation and the following composition: Carbon, 0.10 to 0.15 per cent.; manganese, 0.15 to 0.25 per cent.; silicon, 0.10 to 0.15 per cent.

The ferromanganese contains generally 80 per cent. manganese, 6 to 6.5 per cent. carbon and 0.8 per cent. silicon, while ferrosilicon with 13 per cent. silicon, 1.0 per cent. carbon and 1.5 per cent. manganese is used.

The most important output of the plant consists of machine molded gears, but a considerable product is put into housings for dynamos and motors, which require steel

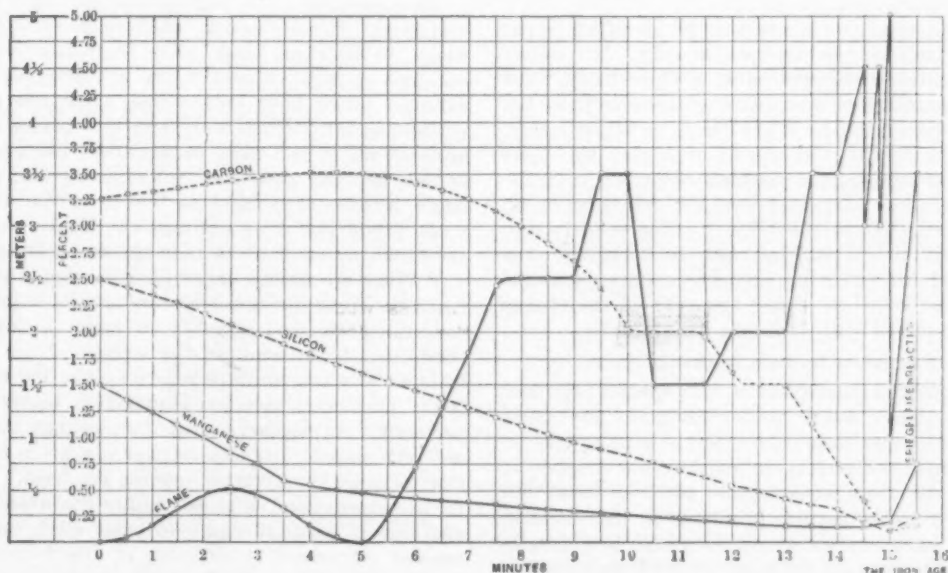


Fig. 8.—Diagram of Flame Development and Chemical Changes.

great care. Rott recommends the following mixtures for this purpose:

1. Six parts finely ground fire clay, 6 parts quartz sand, 2 parts ground coke, 3 parts burnt blue clay, 2 parts unburnt blue clay.
2. Five parts ground up crucibles, 1 part blue clay.
3. Eight parts quartz sand, 1 part ground coke, 2 parts ground fire clay, 2 parts blue clay.
4. Six parts ground fire clay, 4 parts molding sand, 4 parts quartz sand, 2 parts blue clay.

These materials must be thoroughly mixed and allowed to stand 24 hours after moistening. The fresh

of exceptional magnetic properties. Government tests show very successful work in this line.

In addition to the steel foundry, the plant contains an iron foundry which turns out 180 to 250 tons a month, consisting chiefly of machine molded gears and blanks for cut gears, which are finished in another department. Other divisions manufacture street cars, automobiles and castings in aluminum. The steel foundry proper covers an area of 75,000 square feet, in six parallel buildings, each 360 feet in length, and in addition to the plant described above comprises seven annealing furnaces and the cleaning department.

The Liège Congress of Mining and Metallurgy.

SUMMARY OF THE PAPERS ON RECENT PROGRESS IN IRON AND STEEL.

(Special Correspondence.)

LIÈGE, BELGIUM, July 5.—The Congress of Mining and Metallurgy associated with the Paris Exhibition of 1900 decided that the next congress should be held at Liège during the present year in connection with the International Exhibition, and the task of organizing this congress was intrusted to the Liège Engineers' Association and the Union des Charbonnages et Usines Métallurgiques. The latter body left the details of arrangement to the former. No less than 1400 members were enrolled for the Liège Congress, which began its sessions on June 25 and which was presided over by M. Magery, general manager of the Rothe Erde Steel Works. The president of the metallurgical section was M. Greiner, general manager of the time-honored Cockerill Works at Seraing, near Liège. The deliberations extended over the entire week ending July 1.

Coke from Non-Caking Coals.

In an interesting paper M. Hennebutte, general manager of the Société Anonyme des Combustibles Industriels, on the utilization of coals poor in binding elements for coke making, described the phenomena that occur during the carbonization of coal. He arrived at the conclusion that two qualities are necessary for permitting a coal to be transformed into coke—viz.: It must be susceptible of contraction, and, as its caking power depends upon its content of carbon hydrate, this substance must be added when not present in sufficient quantity. But it must be prepared in such a manner that its pyrogenous decomposition will only begin practically when the carbonization is already advanced. The author observed in conclusion that there was no doubt this method has practically achieved the results sought. M. Greiner confirmed this statement, but said that the cost was still too high in many cases.

E. Lecocq of Charleroi showed drawings of his apparatus for determining the hardness of coke. It consists of a disintegrator with steel balls, a sieve being fixed below. The quantity of dust passing through gives the degree of hardness. H. Le Châtelier asserted, however, that appliances of this character never give the same result twice running. On a member observing that the perforated drum had long been used for this purpose, M. Bréda remarked that in the blast furnace coke is subject not merely to vertical but also to horizontal displacement, and for attaining accurate results as to the hardness of the coke the other elements of the charge should also be mixed with it in the disintegrator.

Dry Blast in Iron Making.

In a study of the blast furnace with special reference to drying the blast, Prof. Arthur Lodin of the Paris School of Mines said that this question was of the utmost importance, not merely as regards the dryness of the blast *per se*, from an economic point of view, but especially as regards regular working of the furnace. Engineers, he said, are not generally aware how greatly the degree of moisture in the blast varies from one hour to another, thus causing irregularities in the working of the furnace. This was confirmed by a Creusot engineer, who gave some figures showing that the yield of pig iron is in inverse proportion to the quantity of humidity in the blast.

Cleaning Blast Furnace Gases.

Purification of blast furnace gas was dealt with in papers by Emile Bian, general manager of the Domme-dange Iron Works, Luxembourg; P. Delville, chief engineer at the Angleur Steel Works; Gerard Hooghwinkel of London, and Alexander Gouvy, consulting engineer, Düsseldorf. The first named, after describing the various methods hitherto employed for this purpose, said that they did not intercept the very fine dust, and can only be used to advantage for comparatively small volumes

of gas. Great progress had been made, however, by employing fans with water injection at the inlet, which effectively intercepts the fine dust. A second fan eliminates the humidity and cools down the gas, thus rendering it more easily combustible. There is great advantage, he said, in purifying all the gas of a blast furnace, not merely that which was to be used in gas engines, but also that used in the stoves for heating the blast and that which is burned under the boilers. It had been demonstrated that a saving of 46,000 francs (\$9200) per furnace per annum was possible owing to increased efficiency and the decreased expense of cleaning. [Centrifugal gas cleaning apparatus now being introduced in the United States has shown important economies in these two directions also.—Ed.]

M. Bian considers that when a gas is freed from humidity it is also practically free from dust, and he purifies the gas in two stages. He found that for effecting this purpose congelation is too expensive and therefore fell back on a considerable cooling down of the gas, for which he had devised an appliance, shown in the Luxembourg section of the Exhibition. In a closed tank half filled with water revolves a horizontal shaft carrying a series of disks made of wire gauze. The water drawn up by the disks is first evaporated by the hot gases passing through the upper half of the tank. Subsequently when the gases become too cool the contrary effect is produced. The water on the disks condenses the vapor contained in the gas, so that the latter issues cool and freed from most of its impurities. For completing the purification the gas is then passed through a fan, which renders it perfectly suitable for heating the blast and firing boilers.

Influence of Titanium on Iron and Steel.

In a paper on "The Influence of Titanium on Pig Iron and Steel," Pierre Delville, chief engineer at the Angleur Steel Works near Liège, gave some interesting results obtained in this connection by aluminothermy. Some samples taken both before and after the addition of titano-thermite, which were run into plates and planed, showed far fewer blow holes after the addition than before, and the aspect instead of being dull gray at the edges became of a lustrous white. From an establishment producing steel castings the author had received the following particulars as to the use of titano-thermite:

"When we have a large piece to cast which requires two runs from the converter we introduce into the ladle containing the first quantity of metal a box of titano-thermite ($\frac{1}{2}$ per cent. of the weight of the bath), this being done a few minutes before adding the second quantity. The metal becomes appreciably hotter and mixes perfectly. As a general rule the castings thus obtained are very sound; and this method has given results superior to those by any other process yet tried."

In consequence of these results the author tried the addition of titano-thermite to basic steel, and considers himself warranted in arriving at the following conclusions: Titanium chiefly acts on steels by reducing the oxides dissolved in the metal and eliminating the nitrogen, especially in presence of carbon, so that it appears advisable to add with the titanium substances giving carbon by decomposition in the bath, especially when the metal contains but little of that element.

As to the influence of arsenic on steel making pig irons, M. Delville observed that As. 0.02 per cent. and S. 0.06 per cent. appear to be the highest contents of arsenic and sulphur that may be admitted into iron and steel.

Improved Methods in Open Hearth Steel Making.

In a paper on "The New Methods of Making Steel in Open Hearth Furnaces" P. Ocker of Seraing reviewed these improved methods and arrived at the following

conclusions: Whatever be the process employed liquid metal should be charged; therefore future open hearth steel works should be put up near blast furnaces. The chief advantages of this arrangement are: 1. Economy of labor in handling the pig at the blast furnaces and in charging the open hearth furnaces. 2. Larger production, owing to shortening the operation. 3. Great saving of fuel. 4. Independence of the supply of scrap iron, so that a greater or smaller proportion may be used, according to its price. 5. Possibility of employing for the steel works the surplus motive power produced economically by blast furnace gas.

Discussing means for preventing pipes in steel ingots Herr Daelen of Düsseldorf traced the history of measures hitherto adopted, one consisting in exerting great pressure on the outside or on the inside of the ingot while in a liquid state, and the other in maintaining the top of the ingot hot and liquid sufficiently long to fill the hollow. Feeding the ingot mold at the top, he contends, is preferable to compressing the ingot, because the metaloids have a tendency to rise and thus the top of the ingot is always sound. For small ingots from 1 to 10 hundredweight, which are in the majority, it is important to avoid surface defects; and with this object the author and Herr Riemer heat a refractory lining at the upper part of the ingot mold and consequently the surface of the ingot itself, a practice which has given satisfactory results.

A New Special Steel.

Dr. Leon Guillet of Paris divides special steels into three main groups: 1. Ternary steels, being alloys of iron, carbon and a third substance introduced intentionally while the other constituents do not exceed the normal. 2. Quaternary steels, or alloys of iron, carbon and two other substances. 3. More complex steels, very little employed in industry, but in which the author includes a steel designated "N. P.," recently produced by the Commentry-Fourchambault Company at its Imphy Steel Works. Before being hardened this metal shows all the characteristics of a semihard steel and can be worked as such; but after being hardened without annealing—i. e., after very simple treatment—it possesses all the valuable properties of silicon steels, hardened and allowed to cool slowly, while having over them the great advantage of not requiring to be cooled gradually, but not being so brittle in the direction at right angles to the rolling, which is the characteristic of silicon steels.

The Electric Furnace for Steel.

The great advantage of the electric furnace in metallurgy was pointed out by Robert Pitaval of Paris to be the high temperature it affords—namely, 2000 to 3000 degrees C.—and the progress made in its development since 1900 has been considerable. At the Paris Exhibition of that year only two or three small furnaces were shown with a few samples in a glass case of all the metals or alloys produced by its use. We now see, however, at the Liège Exhibition large steel ingots, blocks of ferro-silicon, chrome iron and other alloys, obtained electrically. Hitherto the electric process has only been possible for making high quality steels, but it is only economical for pig irons when fuel is very dear and the electric current can be obtained at a low rate. In any case the author considers it certain that in future the electric furnace will be employed at the end of the usual refining operations.

The advantages of the electric process for steel making over the open hearth are summarized by Gustave Gin of Paris as follows: 1. A much greater concentration of the heat, permitting the utilization of far smaller spaces. 2. A more methodical and more controllable working. 3. Avoidance of contact between the metal and the gases, which are often not entirely reducing. The electric furnace is capable of easily giving all the series of steels, and will probably serve for making high class metals, but at present the part played by the electric current is almost confined to the finishing operation. The author proposes to employ the electric furnace instead of the Martin furnace in mixed processes, such as that of Witkowitz, where a converter is used for the preliminary and the Martin furnace for the subsequent

refining; but in other cases a Talbot furnace for the second refining. The electric furnace would have the advantage of greater precision in obtaining the final product, with at any rate an equal capacity of production.

Electric Drive for Roll Trains.

For driving roll trains L. Creplet, engineer of the Société Internationale d'Electricité, Liège, advocated the use of continuous current trip base motors. He contends that the problem is practically solved. Indeed there are already several applications in Belgium. The Grivegnée Company has a merchant mill driven by a compound wound motor that can exert from 450 to 900 horse-power, and the Providence Company has another giving out from 500 to 1000 horse-power. The Ougrée-Maribaye Company (which has already applied this principle) will in a few months have a roll train motor of 1000 to 1500 horse-power, capable of direct driving at 75 to 135 revolutions per minute.

On behalf of Herr Ilgner, M. Alexandre Gouvy, consulting engineer at Düsseldorf, dealt with the matter from the standpoint of economy and raised the question whether there is not greater advantage in employing a gas engine coupled direct to the roll train. On the whole, however, he considered that the choice of a motor—steam, gas or electricity—must depend upon the circumstances of each case.

M. Greiner, general manager of the Cockerill Works, considered the problem of driving roll trains electrically as already solved from an economical point of view, and he is of opinion that the best solution is a central electric generator driven by gas engines, and each roll train driven by its own motor.

Double Hardening and Oil Hardening.

It has already been shown by H. Le Châtelier that machine parts which have to stand shock must be hardened, and, better still, subjected to a double hardening instead of being annealed. M. Pierrard gave in a paper the result of his experiments in this connection at the Cockerill Works, and concluded that very mild steel, subjected to double hardening, is the metal most suitable for shafts, and especially those of engines. His experience has also led him to substitute hardening with oil for the double hardening with hot water, the operation being carried on in a tank containing a large quantity of oil, the hottest portion of which is constantly renewed. The shaft, resting on rollers, is made to turn on its axis, so that the hardening shall be carried on regularly.

New Welding Methods.

Of the new welding methods—electric, water gas, acetylene and oxyhydrogen—Felix Jottrand of Brussels prefers the latter, except for self welding. In his process he employs two blow pipes, one above, the other below the bars to be welded, laid horizontally; and when the two ends are sufficiently heated he gives a slight blow by drop hammer, which effects a perfect weld. M. Fouché of Paris contended that acetylene gives very good results, even for self welding, as the acetylene flame is far hotter than that of oxyhydrogen. Moreover, he considers it more economical because a given volume of acetylene affords five times more heat, while being also less expensive.

M. Jottrand replied that the economy is not so great as supposed, because practically a great deal of heat is lost with acetylene owing to the too high temperature. Moreover, an advantage of oxyhydrogen is that it is neutral, while acetylene introduces phosphorus; and owing to the formation of carbonic oxide the air is rendered injurious to the workmen.

M. Fouché rejoined that in France a saving of 40 per cent. is obtained by acetylene. The phosphorus can be eliminated and no complaints are made by the workmen.

Progress in Metallography.

Great interest was manifested in a communication on the technics of microscopic metallography by H. Le Châtelier, who described the various operations from the first polishing to taking the photograph, and stated that his experiments have permitted of greatly simplifying

ing and accelerating the material part of the operation. The first polishing by the emery wheel must be done with care to avoid hammer hardening, and be followed by the application of emery cloth with the hand. For finishing by hand three powders are used, made very homogeneous—emery powder, putty of emery and alumina. The powder is applied with a flannel impregnated with a solution of soft soap and stretched on a glass. The reagents for attacking the metal that seem at present to be preferred are a 5 per cent. solution of picric acid in absolute alcohol, or that mentioned below. For taking the photographs the author prefers the Nernst incandescent lamp with two large filaments.

As to the metallographical examination of pig and finished irons or steels, M. Le Châtelier observed that even without attack by acids a polished metal sample gives certain indications revealing small blow holes and graphite lamellæ in gray pig, iron sulphate and scoria in puddled iron; but as a rule for clearly distinguishing the composition of a metal or alloy it is necessary to attack the sample by acid, generally a 4 per cent. solution of nitric acid in amyl alcohol. He projected on the screen a great many photographs of steel plaques, amply demonstrating that metallography has made great progress as regards a study of microstructure in connection with the brittleness of steels.

Heartily applause followed M. Le Châtelier's communication and it had this practical effect, that it decided M. Greiner to promise the funds which he had hitherto refused for the metallographic laboratory in connection with the Cockerill Works.

Oxygen Flame in Cutting Metals.

M. Jottrand presented a paper on "Cutting Metals by the Oxygen Flame," based upon the well-known circumstance that iron burns easily and rapidly in an atmosphere of oxygen gas. Two blow pipes connected, but with a space of about 1 inch apart, are made to travel along the line of the intended cut. The first raises the metal to a temperature corresponding with bright red, and the second projects onto the heated metal a sharp but thin jet of pure oxygen under great pressure. The process is rapid and economical, while the width of cut for a plate 4 inches thick does not exceed $\frac{1}{8}$ inch. A practical demonstration of the method at the Exhibition was perfectly successful.

Great interest was taken in a communication on the influence exerted on iron and its alloys by the low temperature of liquid air, made by R. A. Hadfield, president of the Iron and Steel Institute. He arrives at the conclusion that the influence of this excessively low temperature is to increase greatly the resistance of iron products, while reducing their ductility to nil. When subjected to shock, however, all the samples show great fragility, excepting alloys of iron and nickel.

The Cockerill Works.

One of the excursions was to the famous works at Seraing, founded by John Cockerill in 1817. These now extend over 266 acres, of which 37 acres are under roof, and 10,000 workmen are employed. The six blast furnaces, about 60 feet high, and each turning out between 80 and 100 tons of Bessemer pig per 24 hours, were built at different times, so that they are not of the most modern construction. The metal is, however, received in a 100-ton mixer for supplying the steel works, which consist of five 10-ton Bessemer converters with a daily production of 800 tons, and five Siemens-Martin furnaces, each of 15 tons capacity. The open hearth process consists in heating on an acid or basic hearth a mixture of pig and scrap, the latter chiefly the scrap of the Bessemer manufacture, each furnace making four to five casts per 24 hours. Only 10 out of the 36 puddling furnaces are retained, yielding 15 per cent. of the whole production, and the puddling and heating furnaces raise steam from the waste gases.

For forging steel the press is far preferable to the hammer, and the members of the congress witnessed with interest the working of a press exerting a power up to 2000 tons, sufficient for the largest forgings. Hydraulic pumps force water into a series of three large accumulators at a pressure of 300 atmospheres (4412

pounds per square inch), which required the whole plant to be made of forged steel. The rail mill, started in 1872, was the first equipped with reversing action (without gear); and the Cockerill Company shows at the Exhibition a 10,000 horse-power reversing engine destined to drive its large beam mill trains. The company was among the first in the field to use blast furnace gas direct in the motors. The first gas worked blowing engine of 600 effective horse-power was started in 1899, and by duplexing the gas engine, shown at the St. Louis Exposition, a motor of 6000 horse-power can be obtained, about the maximum at present required.

Ougrée Iron and Steel Works.

The iron and steel works of the Société d'Ougrée, covering 146 acres (irrespective of reserve lands) and employing 3500 men, and the Marihay Colliery, now incorporated in the same company, were also visited by the members of the Metallurgical Section. Attention was chiefly directed to the blast furnace charging arrangements, which seem at first glance rather complicated though efficient. A Brown hoisting and conveying machine draws a skip up the side of several ore and flux heaps in succession, so that the skip becomes filled after the manner of a steam navvy, and the contents are deposited in small cars, which take it to the foot of the blast furnace. Each car in succession is emptied into a special receptacle, where the elements of the charge are united. Underneath this receptacle is a hopper for filling other trams discharging into the special skips, which are drawn up an incline leading to an electric overhead traveler that charges each of the four furnaces in succession. The coke is also charged into the furnace by the traveler; but the ladle shaped buckets that receive it are let down into corresponding recesses below ground level for easy loading by hand. The fifth furnace, which has a large output, is equipped with an inclined hoist on the American system, and the whole production, 136,000 tons basic pig per annum, is made with 154,000 tons of coke. For the five furnaces there are four blowing engines made by the Cockerill Company, two working with steam and two with blast furnace gas.

New Plant of Chalmers & Williams.—Reference has been made in these columns to the new plant being erected at Chicago Heights, Ill., by Chalmers & Williams. The machine shop and foundry will be contained in an old building purchased with the land and now being remodeled. This building is $314\frac{1}{2} \times 95$ feet, two and three stories high. A $41\frac{1}{2} \times 78$ foot blacksmith shop, a $41\frac{1}{2} \times 97$ foot carpenter shop and pattern shop and a $41\frac{1}{2} \times 89$ foot engine and boiler house comprise the structures to be immediately erected. Later it is the intention to add a 90×200 foot boiler shop, a 100×200 foot foundry, a 40×80 foot storage house and a $50 \times 156\frac{1}{2}$ foot two-story office building. This plant will be mainly engaged in the construction and erection of mining machinery. Fritz Faltz, 140 Dearborn street, Chicago, is the architect.

Central Iron & Steel Company.—The stockholders of the Central Iron & Steel Company, Harrisburg, Pa., at a meeting on July 20 voted unanimously in favor of a bond issue of \$1,500,000. The proceeds will be used in part to retire what floating debt the company has and the balance for further extensions to the works. The details of these extensions are not fully determined, but those made in the near future will probably be in the line of additional machinery and appliances for enlarging the output of the present mills, the company being one of the largest producers of plates in the country. It is likely that the manufacture of other lines of finished products will be entered upon later.

A party of officers of the Brazilian training ship Benjamin Constant, which has been in New York Harbor recently, were guests of Charles M. Schwab, on a visit to the Bethlehem Steel Works on July 20. The visitors, after inspecting the various departments of the works, were taken to the company's proving grounds at Redington, where the firing of naval guns was witnessed.

The Landis Concave and Convex Cutter Grinding Attachment.

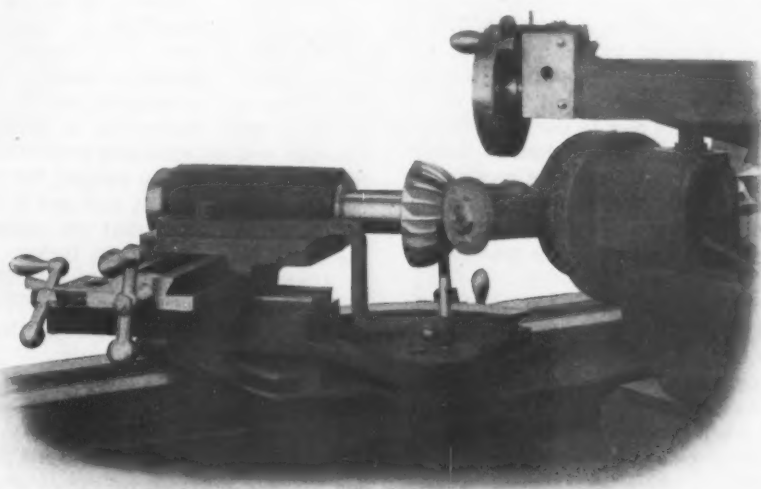
This fixture, made by the Landis Tool Company, Waynesboro, Pa., is designed specially for grinding concave and convex cutters such as are used for forming ball and socket joints for locomotive steam pipe and other similar work. Included in combination with this fixture is the regular Landis side mill grinding attachment, which is mounted on the rear of the main emery wheel base and is swung around into position as shown by the engraving.

The concave and convex grinding feature is for attachment on the standard Landis Nos. 2, 3 and 4 universal grinding machines. It embodies two slides, which are set at right angles to each other for adjusting and locating the point from which the radius of the arc of the teeth is taken. A tooth rest is provided which can be used to support the teeth of the cutter from beneath for right hand cutters, as in the illustration, or can be reversed to bear from above for grinding left hand cutters.

The hole in the work spindle is fitted to receive a No. 5 Morse taper shank. The moving or swiveling part is mounted on a base, which is clamped to the head and foot stock table of the machine through a swivel or pivot

When the case reached the Circuit Court the Government counsel conceded that the lower tribunal erred in its classification, but it was insisted in behalf of the Treasury Department that the alloy is properly dutiable either at 45 per cent. ad valorem as a manufacture of metal or else at \$4 per ton directly or by similitude to ferromanganese. Judge McPherson reaches the conclusion that the claim of the Cramps for duty at 20 per cent. ad valorem under the provision in the Dingley tariff law for "metals unwrought" is well taken and must be sustained. The Secretary of the Treasury will shortly decide whether the Government is to acquiesce in Judge McPherson's finding or take an appeal to the Federal Circuit Court of Appeals.

The Board of United States General Appraisers, in an opinion written by I. F. Fischer July 21, overruled a protest filed by Strouse, Adler & Co. of New York, it being held that merchandise invoiced as "corset steel" is dutiable at 9-10 cent per pound under the tariff provision for sheets of steel. The importers set up the claim that the article should be allowed to enter at 8-10 cent per pound as "hoop, band or scroll steel." The steel was imported in pieces about 100 feet in length, 3 inches in width and measuring less than 25-1000 inch in thickness. General Appraiser Fischer remarks that he believes the steel to



Concave and Convex Cutter Grinding Attachment for Use on Landis Nos. 2, 3 and 4 Universal Grinding Machines.

bearing which is protected from grit. From the under side of the swiveling base there extends a sliding or supporting shoe which is guided in a semicircular groove in the base plate and bears on the lower side of it. In grinding teeth of a left hand cutter, when it becomes necessary to reverse the rest arm to bear against the tooth from above, it also becomes necessary to reverse the direction of rotation of emery wheel, which can be accomplished by changing the driving belt from cross to open running.

The Duty on Alloy for Manganese Bronze.

The United States Circuit Court for the Eastern District of Pennsylvania has rendered a decision in the suit brought by the William Cramp & Sons Ship & Engine Building Company against the Government for alleged excessive rates of customs duty exacted on metal alloy imported by the Philadelphia concern. Judge McPherson, who writes the decision for the court, finds in favor of the Cramp Company and reverses the assessment returned by the Collector of Customs, which was affirmed by the Board of General Appraisers. The merchandise involved in the litigation is an alloy of metal composed of 62 per cent. of iron, 32 per cent. of tin and 6 per cent. of manganese. It is chiefly used as a hardener in the manufacture of manganese bronze, although it is capable of being used for some other purposes. The Board of Appraisers classified the alloy as an article of which aluminum is the component material of chief value.

be properly dutiable at 45 per cent. ad valorem under the tariff's provision for "sheet steel in strips." The board holds that the Collector of Customs erred in his assessment, but as the importers failed to make the right claim the original assessment must be allowed to stand without an affirmation of its correctness.

On July 19 the Board of Appraisers sustained a claim made by Emil Baerwald of New York. Duty was assessed on the merchandise at the rate of 1¼ cents per pound on the ground that it was "round steel wire." Mr. Baerwald maintained that his importation was dutiable at only 4-10 cent per pound under the provision for "steel wire rods." Collector Stranahan is directed to reliquidate the entries on the basis of the lower rate of duty.

Tests to determine the efficiency of the automatic sprinklers have been made in the car barns of the Public Service Corporation of New Jersey. Three cars were fired and in each case the fire was confined to the car in which it originated. The first opened ten sprinklers and was extinguished in 18 minutes after the opening of the first one; the second opened eleven sprinklers and was put out in 2½ minutes; in the third case oil was used all over the interior of the car, but the ten sprinklers which were opened by the heat subdued the flames within 4¼ minutes after they were started. This would seem to indicate that the hottest fire was the easiest to extinguish.

Amendments to Boiler Regulations.

To Be Promulgated by the Secretary of Commerce and Labor.

WASHINGTON D. C., July 25, 1905.—The Secretary of Commerce and Labor has approved a series of important amendments to the General Rules and Regulations of the Steamboat Inspection Service, which have been prepared by the Executive Committee of the Board of Supervising Inspectors, a body created under the act of March 3, 1905, which was designed to provide a more elastic system for revising and amending the standing regulations. Of the 40 amendments about to be promulgated, 14 embody changes in Rules 1 and 2 of the code relating to the construction and inspection of boilers and are of special interest to boiler manufacturers, shipbuilders, &c. The changes are intended to liberalize the rules somewhat, and are based upon suggestions that have been made to the Department since the Revised Code of February 23, 1905, was approved by the Secretary of Commerce and Labor.

Inspection of Boiler Plate.

The first paragraph of Section 7, Rule 1, has been amended with a view to relieving boiler manufacturers of an unnecessary requirement. As the rule now stands every iron or steel plate to be used in the construction of boilers for steamers is required to be inspected and tested according to an elaborate system provided by the rules. Manufacturers have pointed out that in the building of the various types of boilers now in use considerable material is employed which is not subject to tensile strain and which, therefore, ought not to be required to be tested in the manner prescribed. The force of this contention has been admitted by the Executive Committee and the rule has therefore been amended to read as follows:

"7. After June 30, 1905, every iron or steel plate subject to tensile strain to be used in the construction of boilers for steamers subject to the provision of Title LII, shall be inspected and tested by an inspector duly authorized under the provisions of said title, &c."

An important amendment has been made in Section 8, Rule 2. This section provides that "every seagoing steamer carrying passengers shall be supplied with an auxiliary or donkey boiler of sufficient capacity to work the fire pumps, and such boilers shall not be placed below the lower decks except on single deck vessels on any steamer hereafter built or applying for inspection as a passenger steamer." Many complaints have been made that this requirement is wholly unnecessary as applied to pleasure yachts and other small craft which do not carry passengers as a business, and an amendment has therefore been incorporated so the section will read as follows: "Every seagoing steamer carrying passengers for hire shall be supplied with an auxiliary or donkey boiler, &c."

Tested Coupons for Boiler Tubes.

A concession has been made to manufacturers in the matter of furnishing tested coupons with boiler tubes. Section 13, Rule 2, now requires that one such coupon shall be furnished for every 50 tubes or fraction thereof and shall be shipped with the tubes. In view of the additional requirements incorporated in the test regulations as revised last February, it has been decided that this provision regarding tested coupons should not be applied to tubes of less than $3\frac{1}{2}$ inches inside diameter, and the paragraph has therefore been amended to read as follows: "For tubes of more than $3\frac{1}{2}$ inches inside diameter, one tested coupon to be furnished for every 50 tubes ordered, or fraction thereof, and shipped with the tubes."

A modification has also been made in the requirements with regard to the testing of small steam and water pipes. The regulations now stipulate that pipes $\frac{1}{2}$ inch inside diameter up to and including $3\frac{1}{2}$ inches inside diameter shall be tested by the manufacturer before shipment to 600 pounds per square inch hydrostatic pressure and that in addition such pipes shall be subjected to certain other prescribed tests. The Executive Committee have become convinced that such small pipes

should not be subjected to any other test than that of hydrostatic pressure, and the paragraph has been amended to read as follows: "One-eighth inch inside diameter up to and including $3\frac{1}{2}$ inches inside diameter to be tested before shipment to 600 pounds per square inch hydrostatic pressure and not subject to any other test."

A provision has been added to the section covering steam and water pipes requiring one tested coupon to be furnished for every 50 pieces of pipe or fraction thereof ordered, such coupons to be shipped with the pipe.

The requirements for pipe to be used for mud or steam drums as provided by Section 13 of Rule 2 have been generalized to cover all such pipe, the following provision being substituted for the existing regulation: "Any pipe used for mud or steam drums must have the ends of same properly annealed before the holes are drilled or the heads are riveted in."

Increased Pressure Allowed.

As the results of experiments made in the testing of cylindrical flues it has been decided to make an important increase in the pressure allowable when the flues are new and made to practically true circles. The existing regulations provide the following formula for determining the allowable pressure for such flues:

$$P = \frac{C \times T^3}{L \times D}$$

Where P = pressure in pounds; T = thickness in inches, not less than 5-16; L = length between strengthening rings in feet; D = outside diameter of flue in inches, and C = 89,600, a constant, when the flue is made in sections not to exceed 8 feet in length from center to center of ring, flanged to a depth of not less than 3 inches, and substantially riveted together with wrought iron rings between the flanges; the rings to have a thickness of not less than $\frac{1}{2}$ inch and a width of not less than $2\frac{1}{2}$ inches, provided that the radius of the flanges on the fire side is at least $1\frac{1}{2}$ inches.

Applying this formula in the case of a flue 40 inches in diameter, 4 feet between the centers of the rings and $\frac{1}{2}$ inch in thickness, and substituting these values in the formula, we have:

$$P = \frac{89,600 \times (0.5 \times 0.5)}{4 \times 40} = 140 \text{ pounds.}$$

The pressure thus obtained, 140 pounds, is, however, in excess of the pressure allowed by the following limiting formula provided by the existing regulations:

$$P = \frac{8000 \times 0.5}{40} = 100 \text{ pounds allowable.}$$

After investigation the Executive Committee decided that the "constant," 8000, may safely be increased to 9900, and substituting this formula in the limiting formula, the allowable pressure is thereby increased to 123.75 pounds.

Metal Sheathing of Wood Work.

A change has been made in Section 29, Rule 2, which is designed to bring the code up to the best modern practice in the matter of protecting wood work or other ignitable substances approaching within 12 inches of the boiler or smokestack. The existing regulations provide that such woodwork shall be "suitably sheathed with metal so adjusted as to permit the free circulation of air between the sheathing and the ignitable surface." The best modern practice has abandoned the air space in favor of an intersheathing of noncombustible material, and this regulation has therefore been amended to read as follows:

"All wood work or other ignitable substance approaching within 12 inches of the boiler or smokestack (unless such boiler or smokestack is covered with good nonconducting material) shall be suitably sheathed with metal over noncombustible material, and it shall be the duty of the inspectors to see that all wood work or other ignitable substance in or around the fire room is properly protected by metal or asbestos sheathing."

Several other amendments have been made in Rules 1 and 2, but they embrace unimportant verbal changes only.

W. L. C.

The Oregon Iron & Steel Company, Portland, Ore., has just taken a contract for 1000 tons of cast iron pipe for the city of Portland at \$34.50 per ton, f.o.b. Portland.

The Cyclone High Speed Chain Hoist.

A new driving arrangement is the distinguishing feature of the chain hoist recently put on the market by the Chisholm & Moore Mfg. Company, Cleveland, Ohio. The lift wheel or sprocket wheel which carries the lift chain is cast in one piece with the spur wheel that drives it, as shown in detail in Fig. 1. This double wheel turns freely upon a hollow shaft rigidly supported at both ends in the frame. The spur wheel is encircled by a yoke, Fig. 2, having internal teeth meshing with the spur wheel teeth and driven with a gyrating movement about it by two eccentrics diametrically opposed. The hand wheel shaft passes through the hollow main shaft and carries at its further end a pinion which drives two spur wheels, Fig. 4, one on each of the two eccentric shafts.

The number of the teeth in the spur wheel divided by the difference between the number of the spur wheel teeth and the number of the internal teeth of the yoke equals the number of revolutions of the eccentrics necessary to turn the lift wheel.



Fig. 1.

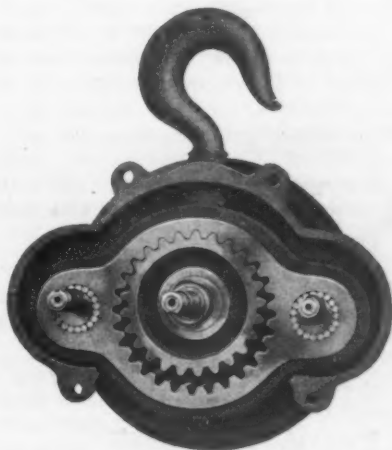


Fig. 2.—Interior Parts of the Yoke.

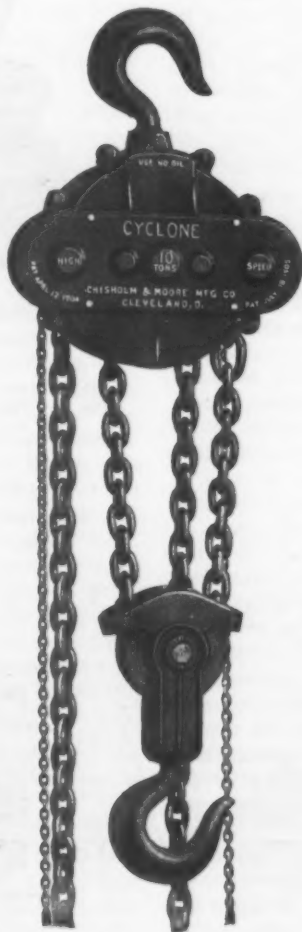


Fig. 3.



Fig. 4.—Gears on the Back of the Yoke.

THE CYCLONE HIGH SPEED CHAIN HOIST AND DETAILS OF ITS PARTS.

once. (In the 1-ton size the spur wheel has 21 teeth, the yoke 24 internal teeth, and the eccentrics turn seven times to each revolution of the lift wheel.) The teeth are accurately cut, work smoothly together and there are a number of them in contact, which insures great strength. The eccentric shafts have bearings at both ends and run in roller bushings in the yoke. All other bearings have self lubricating graphite bronze bushings. There are no overhanging bearings in the hoist, so that under the full load the frame will not spring and bind the working parts. The extreme simplicity and great strength of this construction is apparent. It is as practicable for the 20-ton size as for the $\frac{1}{2}$ -ton, without undue increase in weight or size.

The friction loss of the movement is so slight (the efficiency is about 80 per cent.) that it has been found practicable to gear the hoists to a very high speed without increasing the hand wheel pull above that of other slower hoists. The 1-ton Cyclone overhauls only $29\frac{1}{2}$ feet of chain to raise the maximum load 1 foot with a pull of 125 pounds. It is claimed that the load can be

raised with the Cyclone hoist more than twice as rapidly as with the best types of screw hoists.

An automatic brake permits the spinning of the hand wheel in either direction when there is no load, locks the load with perfect safety and yet permits free lowering by a very slight reverse pull on the hand chain.

Removing the Diverting Dam of the Ontario Power Company.

The diverting dam in the Niagara River, which has shielded the intake works of the Ontario Power Company during their construction, is now being rapidly removed. This dam was built in 1903, extending out from shore above the upper line of rapids and laying dry an area of about 18 acres, including the water courses about the Dufferin Islands. In June water to operate the first 10,000 horse-power unit was admitted to the forebays by a sluiceway cut through the dam.

This diverting dam is about 900 feet long, 250 feet of it extending out from shore at nearly a right angle, and the remainder running at an angle down the stream, thus turning the water out toward the middle of the river. It is built of bottom cribs 31 feet long, 16 feet wide and 11 feet deep, which were floated into place and sunk by loading with stone. No puddle was used, but the dam was made

tight by bags of cement placed on the rock bed of the river against the upstream face of the cribs, and by double lapped tongue and groove sheet piling driven into these bags. A diver, protected from the swift current by a timber shield, placed the bags of cement and fitted the piling to conform to the irregularities of the river bed. This construction proved very successful, as very little water leaked through the dam.

The dam is removed by unloading sections or cribs one at a time, the section being swung in toward the shore into the quiet water behind the remaining portion of the dam. The stone fill is removed by common labor, no diver being required. An interesting and in fact surprising feature is that after a crib is unloaded, in spite of the terrific force of the current it seems almost as stable as before, although held in place only by the small quantity of cement above mentioned. The combined power of a hoisting engine on shore and a derrick on the dam is required to loosen the cribs from the bed of the river, after which they swing easily around toward the shore.

The Goulds New Duplex Water Lifter.

For elevating water in dwellings, apartment houses, hotels, clubs, &c., using city water pressure for the motive power, the Goulds Mfg. Company, Seneca Falls, N. Y., has produced the duplex water lifter shown herewith. It is similar in principle to a duplex steam pump, but is operated with water instead of steam. With this lifter cistern water can be pumped to an open tank in the attic or direct to the house service pipes, and in localities where city water has not sufficient pressure to reach the upper floors of the building the pump end can be connected to the city system, forcing it to the desired elevation. The lifter can be installed so as to be entirely automatic—i. e., the pump will operate only as the demands may require.

It is possible to utilize all the water used in the power end for pumping instead of passing it to the sewer by connecting the exhaust from the power end to taps on the lower floors of the building or using it to flush a closet or kitchen sink. When water is drawn from these lower taps the lifter will operate until the predetermined pressure in the service pipes is reached, and then stop, and while it is pumping water will be elevated to the attic tank.

Fig. 1 shows the general appearance of the lifter and Fig. 2 a sectional elevation through one-half. This lifter is all of bronze, except the bed plate and center support, which is of cast iron. The air chamber is burnished, and

packing. The packings are specially treated by a process which renders them impervious to water and extremely durable.

The quantity of water which may be pumped with a given city pressure depends upon the height to which it is necessary to elevate it. The No. 1 lifter with a pressure of 15 pounds will raise 100 gallons an hour to a height of 15 feet, or 77 gallons to 25 feet, 70 gallons to 35 feet, 66 gallons to 45 feet, or 55 gallons to 55 feet. With higher pressures the quantity pumped or the height to which it may be pumped increases proportionately. A No. 1 lifter with 50 pounds pressure will pump 150 gallons an hour to a height of 140 feet. This lifter exhausts 2.75 times as

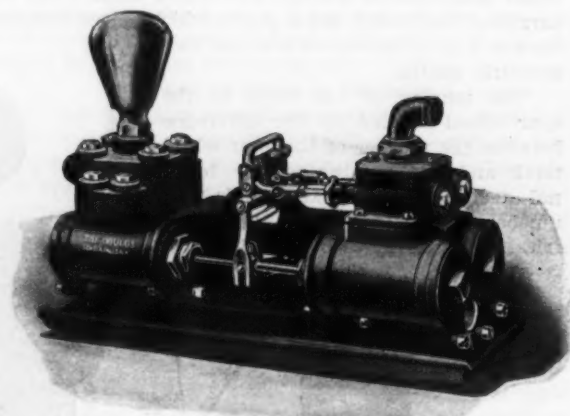


Fig. 1.—The New Duplex Bronze Water Lifter. Made by the Goulds Mfg. Company, Seneca Falls, N. Y.

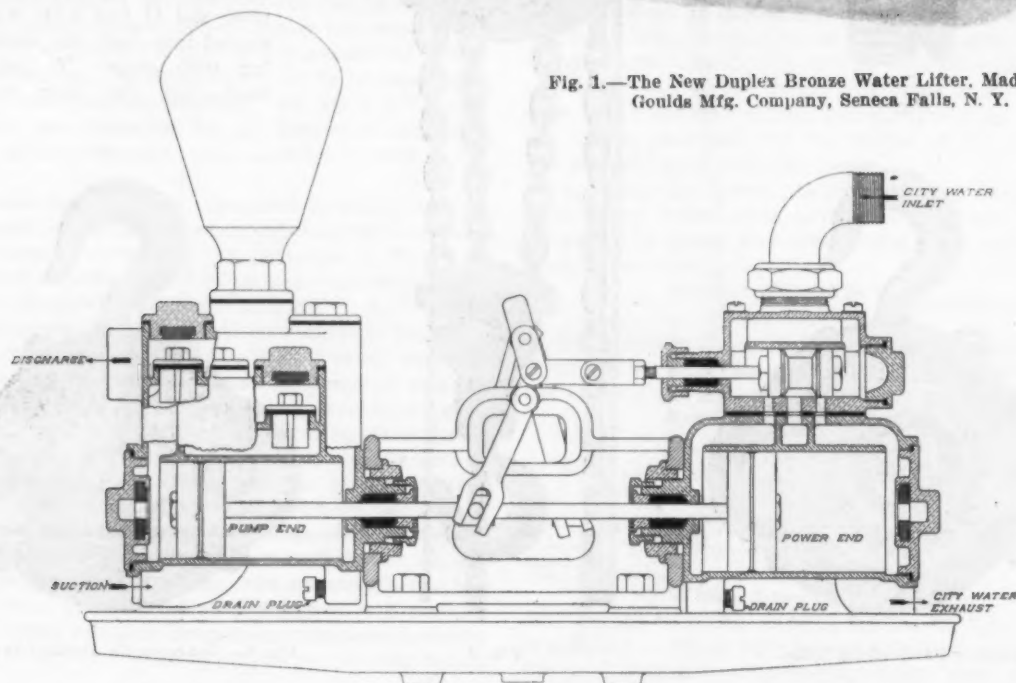


Fig. 2.—Sectional Elevation through One-Half of the Goulds New Duplex Water Lifter.

all the other parts are silver-gilt aluminum painted. The lifter is made in several different sizes.

A specially desirable feature is the new design of valves and valve boxes, which provides for convenient and easy examination of all the valves in the pump and power end without disturbing the pipe connections. The valves in the pump end are of bronze with leather face, and each valve has a separate valve cover just above it, which screws into place. These valve covers each contain a rubber cushion valve stopper, which contributes to a proper seating of the valve and also makes them more durable than metal valves. They are very easily replaced, are noiseless, and are particularly desirable in localities where the city water is muddy or contains gritty substances. The same may be said of the valves in the power end, which are fitted with leather packings instead of being entirely of metal. The wear is very slight. The two pump cylinders are double acting, producing a smooth, uninterrupted flow of water from the discharge. The pistons are of bronze with double crimped hydraulic leather

much water as it pumps. Other sizes have different proportions of cylinders, and the exhausts bear varying relations to the quantities pumped. A No. 2 exhausts just as much as it pumps; a No. 0 exhausts 1.8 times its pumping capacity, and a No. 4 1.54 times its capacity. The selection of a proper lifter for a given service will depend upon the conditions imposed, such as the head and quantity of water required.

Recent trials of the English battle ship King Edward VII afforded an opportunity to compare the Scotch boilers and the Babcock & Wilcox boilers with which she is fitted. Using the latter alone, furnishing steam for 3759 engine horse-power, the coal consumption per indicated horse-power per hour was 1.74 pounds. With the cylindrical Scotch boilers furnishing steam for 3634 horse-power, the consumption was 1.8 pounds per unit of power per hour. At 7510 horse-power the water tube boilers consumed 1.67 pounds of coal per horse-power hour, while at 6686 horse-power the Scotch boilers required 1.88 pounds.

Canadian Manufacturers Visit Great Britain.

A party of about 175 Canadian manufacturers, most of them members of the Canadian Manufacturers' Association, spent the last two weeks in June and the first week in July in England, visiting in turn London, Walsall, Dudley, Birmingham, Sheffield, Leeds and Bradford. The visit was in part a return of that paid to Canada in 1904 by a delegation representing various British chambers of commerce. Liverpool was reached on June 17, and more than a week was spent in London. The provincial tour began on June 26 and lasted a week. The following week was spent at Liverpool, Newcastle and Edinburgh. Most of the visitors expected to go to the Continent before returning to Canada. The London *Ironmonger* interviewed a number of prominent members of the delegation and gave an interesting series of views on various topics pertaining to the manufacturing and commercial interests of Canada.

Prominence is given to the fact that the visit has no political significance. With 1800 members, representing a capital of about \$400,000,000, or four-fifths of the total invested in Canadian manufactures, the Canadian Manufacturers' Association may be considered thoroughly representative of the industrial activities of the Dominion. The association has been especially active in gathering commercial information for its members and largely through its influence the appointment has been secured of Canadian Government trade representatives in Great Britain and other countries. It is the expectation that the recent tour will aid in facilitating trade between Canada and Great Britain.

Explaining why the Canadian Manufacturers' Association had never paid a visit to the United States, one manufacturer said: "The Jews have no dealings with the Samaritans. The United States have no interest for us as manufacturers; they have built around them a tariff wall so high that the Canadian manufacturers can never hope to climb it. I believe that the only thing to bring them to reason is a few more whacks with their own stick. We appreciate and like the Americans as individuals, but their commercial policy injures Canadian manufacturing interests so much that we resent it deeply."

Working of the Anti-Dumping Law.

Summarizing an interview with another visitor, who asked that his name be suppressed, the following is given:

"We talked of the forgings and tool steel entering Canada. The Sheffield houses of Jessop and Firth hold large local stocks and secure a big proportion of the Canadian trade. But the Crucible Steel Company of America offers very strong opposition and the struggle for orders is keen. My friend makes large quantities of carriage springs and has to rely for his material chiefly upon the United States. He often buys at as low a price as \$1.30 per 100 pounds while the same stuff is being sold in the United States at 40 cents more. The dumping clause in the Canadian tariff regulations has something to say on this point. It is being stringently enforced, and I was informed that under international agreement an agent from the Canadian Customs may call upon an American maker or exporter who has sent goods to Canada and demand as a right to see his books and satisfy himself that the Canadian duty has been assessed upon the prices charged for the same articles sold in similar quantities in the producing market. It is rather surprising that so much power should be possessed over the citizens of another country, but only by such a system can any anti-dumping clause be enforced. When the duty is on an ad valorem basis the application of the clause is simple, but for articles subject to specific duty there have been provided certain regulations under which the duty is increased not more than 50 per cent. above scheduled rates when goods are sold in Canada more cheaply than at home. Discussing this question of dumping further with other delegates I was told an interesting instance of what is at present happening in New York. A merchant on Broadway has his window filled with American watches

and the announcement: 'American watches exported to England at low prices and reimported. Twenty per cent. under usual American prices.' And the facts, I was informed, are as stated. The only means by which the makers can circumvent measures of this sort is by attempting to stop up the channels of supply, and in the conditions of sale of American goods a clause to the effect that if exported they may not be sent back to the United States market is becoming rather common."

J. H. Calligan of the Ontario Tack Company, Hamilton, Ont., was also interviewed. His firm manufactures from 100,000 to 150,000 kegs of wire nails a year. He said that German wire nails have ceased to be sent to Canada for a considerable time. The Hamilton firm also draws wire. It uses exclusively wire rods made by the Dominion Iron & Steel Company of Sydney, N. S. Thus the importation of wire rods into Canada may be considered, if not a thing of the past, at least a rapidly vanishing trade. The duty upon imported wire is 20 per cent., which makes profitable domestic manufacture possible. Only gauges 9, 12 and 13 of galvanized fence wire are still admitted duty free as a concession to the farming interests, and these sizes are imported from the United States.

The Influence of the American Press.

The *Ironmonger* interviewer brought out in his inquiries the facts about an interesting phase of the situation in Canada of which little has been heard on this side. One of the visitors was strongly of the opinion that a great part of the transfer of Canadian import trade from Great Britain to the United States is due to the influence of the American publications which flood Canada in quantities. Every magazine or paper sent from Great Britain to Canada direct to the reader must pay individual postage. The British postal authorities have refused to budge from this exaction, although strong representations have been made to them on the subject. In contrast with this practice the postal arrangements between Canada and the United States permit magazines and trade papers, though delivered individually to subscribers, to be assessed for postal charges in bulk at a very low pound rate. "This liberal system," said the visitor, "is far more valuable and productive of business to American manufacturers than you can conceive. Day after day, week after week and year after year we have before us American journals filled with American advertisements illustrating American goods. We cannot help knowing about them when they are thus thrust before us. With the best intentions in the world for assisting British trade in every legitimate way we are influenced, largely unconsciously, by this daily fare of American literature." An agitation is now on foot having for its aim the imposition of a duty upon publications sent into Canada from the United States.

In a boat recently put into operation on Lake Geneva, Switzerland, a 45 horse-power Diesel engine, operating at 260 revolutions per minute, is employed as a prime mover, with a peculiar electrical installation for starting and stopping. The Diesel engine being operated throughout at a nearly constant speed a clutch is provided whereby the shaft of the engine may be disconnected from that of the propeller, leaving the engine to operate a generator and exciter, while an electric motor on the propeller end of the shaft is used for direct propulsion for all maneuvering purposes. When full speed is attained the clutch coupling is thrown in and the engine drives the propeller without the intermediary of the generator and exciter.

It is reported that the 16-inch breech loading coast defense rifle, which the United States Government has built at enormous expense, is to be discarded. One of the reasons given is that it is difficult to make a carriage which will support the gun properly, and it is also alleged that the cost of discharging it is excessive and that too many men are required to handle it. At great expense special machine tools were designed for the manufacture of this gun.

Specifications for the Manhattan Bridge.

Bids for "furnishing the metal work for the anchorages and constructing the towers, cables, suspenders and suspended superstructure of the Manhattan Bridge over the East River between the Boroughs of Manhattan and Brooklyn," will be opened by the Commissioner of Bridges of the City of New York at 2 o'clock on August 10, 1905. In the past week full specifications have been given out by the Department of Bridges, consisting of a 92-page pamphlet, $8\frac{1}{4} \times 10\frac{1}{2}$ inches, accompanied by an elaborate portfolio of detailed drawings. Of particular interest to readers of *The Iron Age* are the specifications for between 41,000 and 42,000 tons of steel for the anchorages and superstructure, drawn up by a board of metallurgical engineers, which are plainly rigid enough to meet the approval of the most exacting.

The new bridge will span the East River between the Brooklyn Bridge and the Williamsburgh Bridge and will be but a comparatively short distance from the former. It is laid out to run from a point on Canal street in New York, between Forsythe and Chrystie streets, passing over the East River at Pike Slip, New York, and landing in Brooklyn between the foot of Adams street and Washington street. The total length of the bridge and approaches is to be 9330 feet. There will be two towers in the river, the distance between them, represented by the center span of the bridge, being 1470 feet. The end spans will be each 725 feet. Preliminary approximate estimates of the cost of the structure and approaches include the following items: River spans, steel superstructure complete, \$3,412,000; masonry, piers and foundations, \$2,320,000; approaches, \$2,950,000; engineering and contingencies, \$870,000; land in Manhattan for abutments and approaches, \$4,000,000; land in Brooklyn, \$2,281,600; total cost of completed structure and approaches, \$15,833,600.

Summary of Steel Required.

In the following table is given a summary of approximate weights of material required, distributed among the various portions of the work:

Approximate Weights, Pounds.

	Anchorages.	Towers.	Cables.	Main span.	Side spans.	Totals.
Nickel steel.....	.....	.....	.....	7,349,600	8,897,800	16,247,400
Structural steel.....	1,335,600	21,333,800	30,200	10,602,600	10,447,200	43,749,400
Wire .....	.....	.....	12,176,200	.....	.....	12,176,200
Suspenders, &c.....	.....	.....	1,153,600	.....	.....	1,153,600
Eye bars.....	3,731,900	.....	.....	.....	.....	3,731,900
Castings, steel.....	1,500	3,385,200	1,744,600	13,700	28,200	5,173,200
Castings, iron.....	18,500	189,100	54,500	7,600	24,600	294,300
Pins, bolts, nuts, &c.....	307,500	119,100	383,000	10,000	22,600	842,200
Totals of steel.....	5,395,000	25,027,200	15,542,100	17,983,500	19,420,400	83,368,200

The aggregate represents nearly 42,000 net tons. To this is to be added 18,700 pounds of bronze, 25,200 pounds of zinc and 28,000 pounds of lead. For the towers 930 cubic yards of concrete are called for.

Acid Open Hearth Steel.

The specifications for rolled carbon steel provide that "all structural steel, excepting that to be used in the architectural work, ladders, gratings and such similar minor details as the engineer may specifically exempt from the exclusive use of such steel, shall be made in an open hearth furnace lined with silica." Other provisions of the steel specifications are quoted below, not complete, but sufficiently full to indicate their rigidity:

The stock from which this steel is made shall consist of pig iron, or of washed pig, or of a combination of both. Acid open hearth scrap resulting from previous heats for this work may be used in quantities not exceeding 25 per cent.

Washed pig shall not be decarbonized below 1.50 per cent. during washing, and an analysis for carbon, phosphorus and sulphur shall be made from each cast. During the reduction of steel in the open hearth furnace decarbonization below 0.12 per cent. of carbon will not be allowed.

No stock used in the open hearth or the washing furnace shall contain more than 0.10 of 1 per cent. of phosphorus or more than 0.04 of 1 per cent. of sulphur.

The use of iron ore for the reduction of carbon in the furnace charge will be permitted according to usual and good practice. The recarbonization of steel and addition of manganese shall

be performed in a careful manner, giving the most uniform results and to the satisfaction of the engineer.

The ladle tests of steel as usually taken shall not contain more than the following proportions of the elements named: Phosphorus, 0.04 of 1 per cent.; sulphur, 0.04 of 1 per cent.; manganese, 0.60 of 1 per cent.; silicon, 0.10 of 1 per cent.

The ladle tests of the carbon rivet steel shall not contain more than 0.035 of 1 per cent. of phosphorus and not more than 0.03 of 1 per cent. of sulphur.

Rivet steel shall be used for all bolts and threaded rods.

The amount of discard from the top and bottom of ingots must be sufficient in the judgment of the inspector to insure steel of uniform quality, free from piping and undue segregation.

In order to determine the amount of discard necessary the manufacturer must furnish all the necessary facilities for experiments and investigations.

All billets must be thoroughly inspected, and all snakes, cracks or other flaws must be chipped out, except where such flaws are so serious as to make it doubtful in the opinion of the inspector whether they can be chipped out, in which case the billets shall be rejected.

The finished material shall be free from injurious seams, flaws, cracks or defective edges, and have a clean, smooth finish.

It shall be true to section (no defective fillets nor shaded back flanges). The variation in weight shall be in accordance with the standard specifications of the American Society for Testing Materials, and shall be less when plates are ordered to gauge for special service.

Specimens cut from the finished material shall show the following physical properties:

Material.	Ultimate strength. Pounds per square inch.	Minimum elastic limit. Pounds per square inch.	Minimum elongation. Per cent. in 8 inches.	Minimum reduction of area. Per cent.
(a) Shapes and universal mill plates....	60,000 to 68,000	33,000		44
(b) Eye bars, pins and rollers.....	64,000 to 72,000	35,000	1,500,000	40
(c) Sheared plates....	60,000 to 68,000	33,000	ultimate.	44
(d) Rivet rods.....	50,000 to 58,000	30,000		50
(e) High carbon steel for trusses.....	85,000 to 95,000	45,000		35

Specimens cut from plates, bars and shapes of items (a), (b) and (c), 2 inches wide, shall bend cold 180 degrees around a rod of a diameter equal to the thickness of the specimen; when at or above a red heat 180 degrees flat.

Specimens cut from rivet rods (item d) shall bend 180 degrees flat when cold, or when at or above red heat. A test piece 2 inches long when heated to a bright cherry red shall flatten longitudinally under the hammer to a thickness of $\frac{1}{4}$ inch without serious cracking on the edges.

Specimens of high carbon steel (item e) not less than 2 inches wide shall bend cold 180 degrees around a rod of diameter

equal to twice the thickness of the test piece without sign of cracking.

Full sized sections of eye bar material shall bend cold about a rod of diameter equal to twice the thickness of the bar.

All specimens in bending tests must show no signs of cracking at any point.

The fracture of all tension tests shall show a fine, silky texture, of a uniform bluish gray or dove color, free from black or brilliant specks, and show no sign of crystallization.

Rigid tests will be made to guard against red shortness.

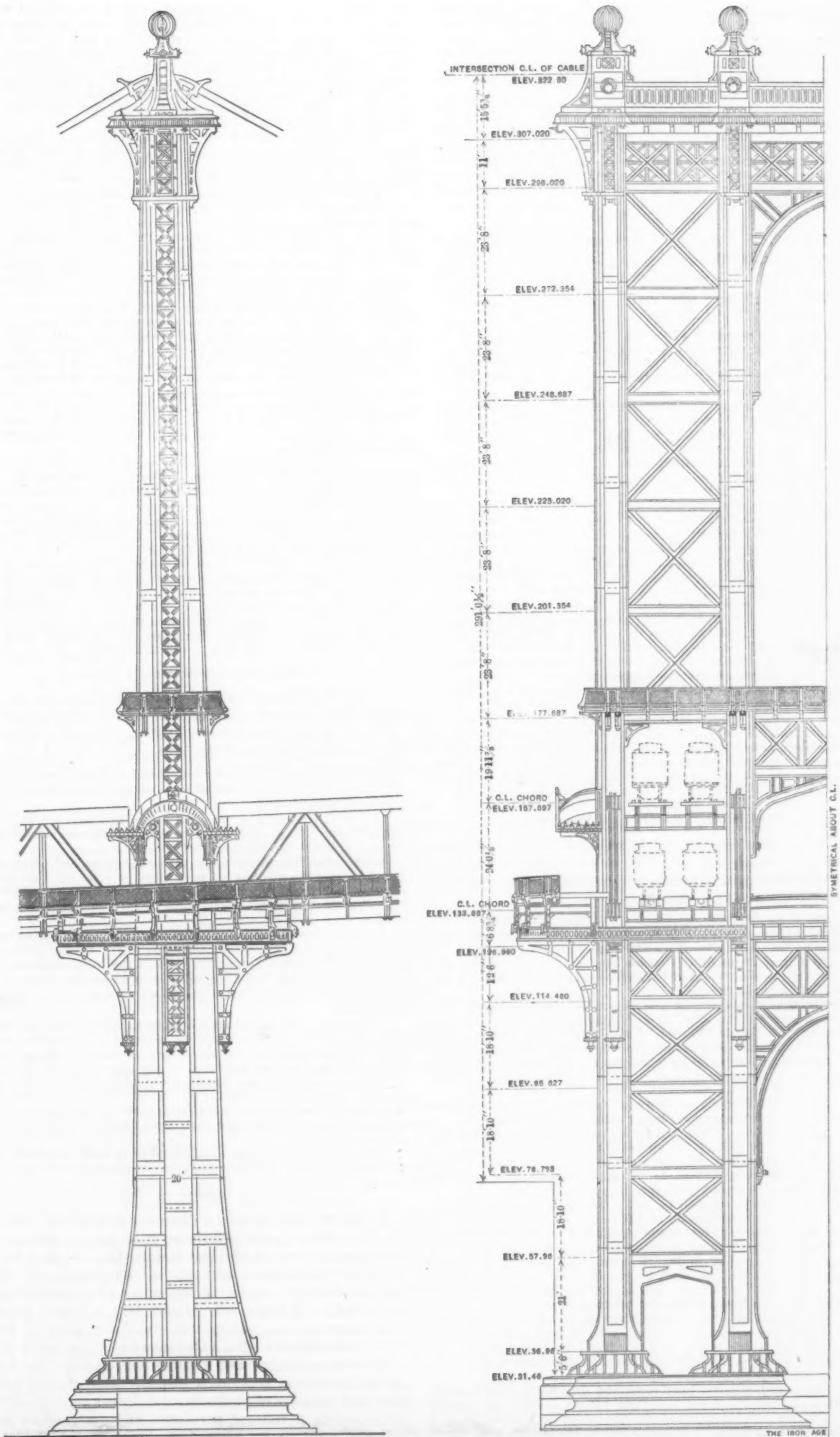
Roller Nickel Steel.

The same requirements specified for rolled carbon steel apply to nickel steel. The ladle test it is provided shall not contain less than 3.25 per cent. of pure nickel. Other requirements are as follows:

Nickel rivet steel shall contain not less than 3.25 per cent. of nickel and not more than 0.035 of 1 per cent. of phosphorus, nor more than 0.03 of 1 per cent. of sulphur.

Care shall be taken in the heating and rolling of nickel steel to prevent the formation of heavy scale. The material must not be pitted by rolling the scale into it. All material with pitted or heavily scaled surfaces or with ragged edges will be rejected.

Nickel steel for plates and shapes in the finished material must meet the following physical requirements: Ultimate strength, 85,000 to 95,000 pounds per square inch; elastic limit, 55,000 pounds per square inch minimum; elongation in 8 inches (per cent), 1,600,000 minimum; reduction of area, 40 per cent. minimum. ultimate



General Elevation of Towers of the Manhattan Bridge.—Four Elevated Railway Tracks on Upper Deck of Bridge, and Four Trolley Line Tracks on Lower Deck.

Specimens of nickel steel not less than 2 inches wide shall bend 180 degrees around a rod of diameter equal to twice the thickness of the specimen without sign of fracture.

Nickel rivet steel shall have an ultimate strength of 70,000 to 80,000 pounds per square inch, an elastic limit of at least 45,000 pounds per square inch, and a percentage of elongation $\frac{1,600,000}{\text{ultimate}}$ in 8 inches. It shall bend cold without sign of fracture 180 degrees flat; and a test piece 2 inches long when heated to bright cherry red shall flatten longitudinally under the hammer to a thickness of $\frac{1}{4}$ inch without serious cracking on the edges. Nickel steel shall comply with the specifications for carbon steel as to true section and freedom from flaws.

Steel Castings.

It is specified that steel castings shall be made in an open hearth furnace lined with silica; that at least one-third of all stock used shall be pig iron and that all scrap shall be of a quality satisfactory to the engineer. Other requirements are as below:

During the reduction of the steel in the furnace it shall not be decarbonized below 0.10 of 1 per cent.

In making steel for castings the use of iron ore, ferrosilicon, ferromanganese and spiegeleisen will be allowed according to usual and good practice.

The ladle test of steel for castings shall not contain more than the following proportions of the elements named: Phosphorus, 0.05 of 1 per cent.; sulphur, 0.05 of 1 per cent.; manganese, 0.80 of 1 per cent.; silicon, 0.35 of 1 per cent.

All steel castings shall be carefully and thoroughly annealed in a manner approved by the engineer, and shall have a fine grained or silky fracture.

All castings shall be sound and free from shrinkage cracks and as free from sand holes and injurious blow holes as the latest and best practice can produce. The engineer shall be the final judge as to whether a defect is sufficient cause for rejection. Every casting which contains a blow hole or blow holes or any other cavity or flaw of such size and so placed as to injure it materially shall be rejected.

Test pieces taken from coupons on the annealed castings shall show an ultimate strength of not less than 65,000 pounds per square inch, an elastic limit of at least 35,000 pounds per square inch, and an elongation of not less than 20 per cent. in 2 inches. They shall bend without cracking 120 degrees around a rod three times the thickness of the test piece.

All steel castings must be true to the drawings, with smooth surfaces, and all re-entrant angles must be neatly filleted. They must be planed exactly true and smooth where the drawings require, and all holes for bolts must be drilled accurately to metal templates. Bolt holes in castings shall be "spot faced" wherever required by the engineer.

All cores of castings shall be thoroughly removed and the mold sand thoroughly cleaned from the surfaces.

Material for Cables and Suspenders.

Acid open hearth steel is specified for the wire for cables, suspenders and hand ropes, and the wire for serving the cables is required to be made of Norway iron. Other details are as follows:

The stock used for wire steel shall consist of pig iron, with the admixture only of such quantity and quality of acid steel scrap as may be approved by the engineer. No portion of the pig iron or of the scrap or iron ore used shall contain more than 0.06 of 1 per cent. of phosphorus, nor more than 0.04 of 1 per cent. of sulphur.

The use of iron ore for the reduction of carbon in the furnace charge will be allowed according to the usual and good practice. The recarbonization of steel is essential, and the addition of manganese and carbon shall be accomplished by the use of ferromanganese or spiegeleisen only, and shall be performed carefully, in a manner most likely in the opinion of the engineer to give good results.

During the reduction of the steel in the open hearth furnace it shall not be decarbonized below 0.20 of 1 per cent.

The ladle tests of the steel shall not contain more than the following proportion of the elements named: Carbon, 0.85 of 1 per cent.; manganese, 0.55 of 1 per cent.; silicon, 0.20 of 1 per cent.; phosphorus, 0.04 of 1 per cent.; sulphur, 0.04 of 1 per cent.; copper, 0.02 of 1 per cent.

The finished steel shall be cast in ingots of such size, weight and shape and so poured as, in the judgment of the engineer, to eliminate to the greatest degree piping and harmful segregation. All surface defects shall be removed, and enough of the top of each ingot discarded to insure sound material. This discard must represent not less than 30 per cent. of the weight of the ingot, and shall extend as much farther as may be necessary to secure freedom from pipings and injurious segregation.

The wire billets rolled from these ingots shall be free from cracks and seams, and shall be straight and have square sections, suitable for rolling into wire rods. The billets shall be cut into uniform lengths, to weigh not less than 350 pounds each, and surface defects shall be cut out.

The wire for cables, hand ropes and suspenders shall have an ultimate strength of not less than 215,000 pounds per square inch before galvanizing, and an elongation of not less than 2 per cent. in 12 inches of observed length, the stretch to be measured while the specimen is in the testing machine. The bright wire shall be capable of coiling cold around a rod $1\frac{1}{4}$ times its

own diameter without sign of fracture. The cable wire before galvanizing shall measure 192-1000 inch in diameter as shown, and shall not vary in gauge more than 3-1000 inch. It shall be drawn on large-sized blocks, and finished in single lengths of not less than 3000 feet, and shall be drawn as straight as possible without any kinks or sharp bends. The serving wire shall be No. 9 gauge before galvanizing. After galvanizing the steel wire shall have an ultimate strength of not less than 200,000 pounds per square inch of gross section.

No machine straightening of wire will be allowed. The wire must not, from tendency to coil, cause trouble or delay during any of the operations from the splicing and winding on reels to the completion of stringing into cable strands.

Sufficient physical tests on the finished coils of wire shall be made at the mills to satisfy the engineer that the wire meets the specified requirements; but tests may be taken from both ends of each coil in order to insure the specified physical requirements.

The wire for the cables, cable serving, hand ropes and suspenders shall be galvanized and inspected as to the following requirements for galvanized wire: When galvanized it shall gauge not more than 5-1000 inch larger than the bright wire. The galvanized wire shall have an elongation of 4 per cent. in 12 inches of length, as observed under tension, and shall bend continuously around a mandrel four times the diameter of the wire without breaking or peeling off any of the zinc coating.

The galvanizing shall consist of a coating of zinc 99.75 per cent. pure, containing not more than 0.03 of 1 per cent. of iron. It shall be applied in the molten state in an even and uniform manner. The zinc coating shall be so applied that it will adhere firmly to the surface of the wire and form a continuous coating of uniform thickness.

All specimens of galvanized wire shall be capable of withstanding the following test: The sample shall be immersed in a standard solution of copper sulphate for one minute, immediately washed in water thoroughly and wiped dry. This process shall be repeated. If after the fourth immersion there should be a copper colored deposit on the sample or the zinc should have been removed, the sample shall be rejected.

The standard solution of copper sulphate shall consist of a solution of commercial copper sulphate crystals in water. This solution shall have a specific gravity of 1.185 at 70 degrees F. While a sample is being tested the temperature of the standard solution shall at no time be less than 60 degrees F., nor more than 65 degrees F. While galvanizing the cable wire shall be coiled on blocks not less than 4 feet in diameter.

General Provisions as to Steel.

After stipulating that all steel for any purpose in the bridge shall be made in works of established reputation for the kind and character of steel specified, the general provisions require the following:

All finished material shall be rolled or forged from billets which are of a size to reduce at least 16 times in area in forming the finished shapes.

No lime or other basic material other than iron ore shall be added to the furnace charge of acid open hearth steel during any stage of the melting or pouring of the steel.

All superintendents, foremen, melters, helpers and others engaged in the manufacture of each class of steel for this work shall be men experienced in this line of work and of sufficient recent practice in making such class of steel to insure the best results.

Acceptance of any material at the mill, foundry or elsewhere, before its use, will not be considered as final. Should any piece prove to be defective at any time before the final acceptance of the completed work, it will be rejected and must be replaced by a satisfactory piece without additional compensation to the contractor.

When acid open hearth steel is made in mills producing other kind of steel, no material will be accepted unless made especially for this work; and when so made it shall be subject to a system of identification approved by the engineer; and, furthermore, such especially made steel shall be handled by itself or isolated in any manner required by the engineer, to prevent the possibility of its becoming mixed with other kinds of steel. Any scrap used must be stamped with heat number or other marks for identification.

No steel or washed pig shall be made or cast nor shall any material be rolled unless the engineer or inspector is present.

A modification of the Le Chatelier pyrometer, recently placed on the market in France, is of much lower price, being constructed of cheaper metals, and adapted for a range of temperature only up to 600 degrees C. The thermo elements consist of two wires of a special iron, contained in an inner tube of porcelain, which is packed with asbestos and inserted in an outer tube of iron. This is furnished with a galvanometer of the usual type and forms a durable and reliable instrument. The high priced instrument contains a thermo-couple of pure platinum and an alloy of platinum with 10 per cent. rhodium, contained in a tube of porcelain, and designed to give reliable readings to upward of 1000 degrees C. (1832 degrees F.).

PERSONAL.

Josef Reuleaux, formerly chief engineer of Alex Laughlin & Co., engineers and contractors, Pittsburgh, has opened an office in the Second National Bank Building, Pittsburgh, under the firm name of Josef Reuleaux & Co. Mr. Reuleaux is the designer of the Laughlin-Reuleaux continuous heating furnace. Associated with him is Herman Buhner, for many years superintendent of erecting for Alex Laughlin & Co., and W. G. Parker, an engineer from the same concern, who has had charge of the erection of a number of modern steel plants.

O. M. Hartzel, widely known in the iron, tin plate and coal trades of the Middle West, and for the last five years general sales manager of the Jamison Coal & Coke Company, Pittsburgh, has sold his interest in the company and resigned his position, the change being effective August 1. For many years he was connected with the Park Steel Company and for 13 or 14 years was a prominent broker in pig iron and kindred products in Pittsburgh. Mr. Hartzel has a number of interests in the West, particularly in the State of Washington, and is going to spend some time in travel before resuming active business life.

A. H. Whiteside, manager of the Allis-Chalmers Company's district office at Atlanta, Ga., has been transferred to the Philadelphia district office, where he succeeds as manager W. A. Wood, resigned. M. W. Thomas has been appointed manager of the company's district office at Atlanta, Ga., and W. J. Buckley has been appointed manager of the district office at St. Louis. H. P. Hill, whom the latter succeeds, goes to the Salt Lake City district office.

Geo. H. Huli, president of the American Pig Iron Storage Warrant Company, New York, is spending a few weeks in Europe.

H. H. Ward has become vice-president and secretary of the McClean Arms & Ordnance Company of Cleveland, Ohio, manufacturer of the McClean rapid fire gun.

E. A. Tomlin, Jr., formerly connected with the National Tube Company's Chicago office, has accepted a position with the David Bradley Mfg. Company, Council Bluffs, Iowa, manufacturer of implements.

George H. Lowe has been made superintendent of the Portland Iron & Steel Company, Ligon, Maine, succeeding George H. Fisher. Mr. Lowe was until recently superintendent of the Sligo Iron & Steel Works, Connellsville, Pa.

John F. Stevens, chief engineer of the Panama Canal, and Jackson Smith, his assistant, sailed with Chairman Shonts from New York for Panama on July 20. Mr. Smith, the newly appointed assistant to the chief engineer, was until recently general passenger agent and assistant to the president of the International Railway of Mexico.

Paul Voorhees, engineer for the Buffalo & Susquehanna Iron Company, has resigned and accepted a position as assistant engineer with the Philadelphia & Reading Railway, with headquarters at Harrisburg.

Albert J. Pitkin, president of the American Locomotive Company, recently sailed for Europe. He will return early in September.

W. H. Ross succeeds E. E. Linthicum, who recently resigned as resident manager of the United States Cast Iron Pipe & Foundry Company at Anniston, Ala.

W. C. E. Nazro, welfare manager of the Plymouth Cordage Company, North Plymouth, Mass., and Edward A. Moffett, editor of the *Bricklayer and Mason*, New York, two experts in welfare work selected by the welfare department of the National Civic Federation, sailed for the Isthmus of Panama on July 20. They have been engaged by the Canal Commission to investigate the needs and opportunities on the Isthmus for the recreation of workers engaged in canal construction. It is the intention to erect club houses, with facilities for reading and for games; also to provide fields for such athletic sports as are suited to the climate.

Fred. Johnson, for the past ten years foreman of repairs at the Morse Twist Drill & Machine Company,

New Bedford, Mass., has resigned to accept a similar position with the Union Twist Drill Company of Athol, Mass.

F. J. Cheney, who has been the manager of the Berlin, Conn., plant of the American Bridge Company, has been transferred to the Edge Moor plant of the company, Edge Moor, Del., where he will fill a similar position. D. W. Bliem has been appointed manager of the Berlin plant to succeed Mr. Cheney.

W. P. Snyder of W. P. Snyder & Co., Pittsburgh, Pa., and president of the Shenango Furnace Company, sailed on Wednesday, July 26, for a month's stay abroad.

Charles A. Moore, president of Manning, Maxwell & Moore, sailed this week on the Deutschland for Carlsbad, where he will probably stay until September.

Robert A. Bole, Pittsburgh manager for Manning, Maxwell & Moore and one of the directors of that company, sailed on the Baltic this week for England.

Among the passengers on the Baltic, which sailed yesterday, was Charles A. Schoen, head of the Schoen Pressed Car Wheel Company of McKees Rocks, Pa.

OBITUARY.

NOTES.

WILLIAM JESSOP, chairman of William Jessop & Sons, Limited, died on July 4, at his country estate, Thornsett Lodge, Bradfield, England, after a long illness. He was born in October, 1856, was educated at Repton, Germany, and at Cambridge. Since 1887 he had been chairman of William Jessop & Sons, Limited, and was the head of the fourth generation of the Jessop family in control of that well-known Sheffield steel firm, the business having been established in 1774. He was president of the Jessop Hospital for Women, an institution founded by his father, the late Thomas Jessop, to which the latter contributed about \$200,000. The firm of William Jessop & Sons established the Jessop Steel Company in the United States in 1901, and its works at Washington, Pa., were started in the latter part of 1902. William Jessop was president of the Jessop Steel Company. He visited Australia, Japan and the United States in 1903.

WILLIAM R. WILSON, secretary of the Warren Foundry & Machine Company, Easton, Pa., died on July 20, aged 87 years.

EDWARD W. NASH, president of the American Smelting & Refining Company, died at his home in Omaha, Neb., on July 22. He suffered a stroke of paralysis on May 22. Mr. Nash is survived by his widow and five children.

NORMAN S. BOARDMAN, senior partner of the firm of L. Boardman & Son, East Haddam, Conn., died in that town July 21, aged 64 years. He had been ill for several months. Mr. Boardman was the son of Luther Boardman, the founder of the silver ware business of L. Boardman & Son, and was admitted to the firm in 1864. He was a prominent man in the business and banking life of his community. He leaves a widow, two daughters and an aged mother.

BIRDSALL CORNELL, who was one of the pioneers in the structural iron business in New York, died at his home at Morristown, N. J., on July 23, aged 75 years. He had been living a retired life for the last ten years, but to the older generation in the iron business he was well known. He was born and educated in this city and began his business career with the firm of J. B. & W. W. Cornell, in which he later became a partner. About 40 years ago Mr. Cornell severed his connection with the company and lived abroad for a time. On his return in 1871 he became president of the Aetna Iron Company, which position he gave up in 1875 to connect himself with the company he started with, the name of which had been changed to J. B. & J. M. Cornell, as it is now. The deceased was a fellow of the Society of Designers and he belonged to the Society of Mechanics and Tradesmen. He is survived by a son, George B. Cornell, who is a civil engineer in New York.

to drop the kind of lawyer they now employ, and equally difficult to get any great number of wage earners to pay their money for such a form of insurance. In the first place it is necessary that the company be a very strong one in order to secure the confidence of the workman and working woman. If it is strong it must of necessity be officered by first-rate men and must employ good lawyers, and perhaps the employer would quite as soon deal with such a corporation as with the ordinary tort lawyer who seeks his practice on a percentage basis as a speculation. If the company is otherwise organized it will prove short lived. On the whole it cannot be considered a menace to the employer of labor, and probably it will not be regarded as filling a long and sorely felt want of the workingman.

Selling Radically New Tools.

Manufacturers of new tools which mark a stride ahead in the amount or excellence of product make frequent and offer bitter complaint of the great difficulty of getting a satisfactory audience from the man who makes large use of the particular class of tool in his establishment. A number of such machines have been put on the market within the past year or two, some of them for special purposes, others for general purposes within limits, and the experience of their builders has been the same apparently. Many of those solicited to buy would not listen to the honest statement of what a machine would accomplish, and if they did listen did not give credence. It was too much to believe that a machine of a standard type would double the existing maximum rate of production, and if the claim went as high as to triple the rate it was considered that the ambitious inventor's enthusiasm had led him far from the path of truthfulness. Yet in each instance these machines have found their proper place, and for the same reason—their builders kept at it until they obtained the start from which business grew until each machine was in demand.

It is the case of the honest claim vindicated by commercial test. Yet in several such instances the manufacturer, in introducing his machine, did not dare to tell the whole truth concerning what it would do. He would not have been believed. He built up the beginning of his business by honest deceit, for he told would-be customers that the machine would produce less than its actual capacity. It was good business to put in a machine on trial and have it said that its builder had understated what it would do. Such words from a customer have great weight and travel far. An unfortunate necessity proved a blessing. It is in such ways that starts have been obtained which have led to great successes. Such a policy pays much better than to exaggerate to a point making it perfectly apparent later on that a machine is deficient. The result is that the purchaser has no further use for tools of that make, no matter how many years may elapse.

Yet the tendency of some salesmen is to make unwise promises for their goods. These men are not successful in the long run, for they cannot hold business. The successful machinery salesman keeps his trade year after year because he can be trusted. He is not responsible for any share of the conditions represented in the saying that whatever a man has to sell, and no matter how honest his statement of its merits, the person to whom he tries to sell for the first time will discount the story 25 per cent. at least. Buyers know the cause of the saying. They have been imposed upon so much that it takes

time for a new salesman to make a place in their esteem, based upon honest dealing. It may be counted on that every bill of goods that is not up to the contract made by the salesman is an actual money loss in the final round-up. Much of the loss comes because the house does not know that the salesman has drawn the long bow, but sooner or later it is making inquiries to ascertain why the customer's trade has gone elsewhere.

CORRESPONDENCE.

Chain Making by Electric Welding.

To the Editor: I have read with much interest the article on "Chain Making by Electric Welding," by Andris-Jochams, in *The Iron Age* of July 13, 1905. As I am more or less familiar with methods of electric welding in the hardware business it would seem well to call your attention to some statements which are made in this article.

In the description of the electric welding machine, summing up some of its advantages, the author states that no loss in electric energy results in welding a chain, as the current used for the heating passes only across the joint. Attention should be called to the fact that a chain ring is a closed circuit, and in the method of applying the electros thereto a very considerable percentage of the current strength must pass around the ring, especially in loops as small as are required for 9-32-inch chains. In all forms of band or ring welding, of which chain is only a type, the percentage of loss of current or energy passing around the ring instead of across the joint is always from 10 to 30 per cent.

Another point of importance is the statement that the machines will work best when operated nonautomatically. This is clearly incorrect. If you are depending upon the personal equation of a man or boy to do the upsetting the length or the amount of upset will vary in accordance with the pressure maintained while the weld is being made, and as no two welds will be absolutely alike and no two operators will work precisely alike, the article when welded will reflect this inaccuracy of pressure. It has been the experience of every one in the use of automatic or nonautomatic machines that it is only those which are made absolutely automatic on which uniform results can be obtained.

In looking over the schedules of costs in making chains it seems very evident that the writer of the article has been misinformed. In Table No. 2 the statement is made that the cost of welding per 100 pounds for making common chain on a gas fire is $4\frac{1}{2}$ cents per pound, or \$4.50 per 100 pounds. As 9-32-inch chain can be bought at a considerable less price than \$4.50 per 100 pounds, it is very evident that the table giving this cost is inaccurate, as the manufacturer could not afford to pay $4\frac{1}{2}$ cents per pound for making a chain without any selling expense added thereto, as it is quoted in the market every day at a lower price.

The statement made by your correspondent regarding the integrity of electrically welded chain and the high tensile stress that it will sustain is correct. The method of making the chain is also theoretically correct. The weld should be made at the side as shown, rather than in the end of the loop as is the common practice with hand made chains at the present time.

W. S. GORTON,

Secretary and General Manager,
Standard Welding Company.

CLEVELAND, OHIO, July 17, 1905.

The O'Garra Coal Company has been incorporated with a capital stock of \$6,000,000 to take over the property of ten coal companies in Salina County, Ill., on the line of the Big Four Railroad. The property aggregates about 40,000 acres of coal land and the annual output of coal will approximate 3,000,000 tons. T. J. O'Garra of the coal firm of O'Garra, King & Co., Chicago, will be president of the new company, and Walter D. Kerr will be treasurer.

An Extra Session of Congress and the Revenue Question.

WASHINGTON, D. C., July 25, 1905.—The apparently authoritative announcement from Oyster Bay that President Roosevelt will call an extra session of Congress on November 13, three weeks in advance of the regular date of meeting, is accepted here as indicating that the revenue question is to be dealt with early next winter and that various phases of the tariff problem, including the establishment of a new basis for the negotiation of reciprocity treaties, will be carefully canvassed by the leaders before the assembling of the special session. The President has recently communicated to more than one prominent visitor at his summer home his own conviction that Congress should meet the revenue issue promptly and should settle it by the adoption of something better than a mere temporary device.

A Forty-Million Deficit.

The necessity of providing a large amount of additional revenue at an early date is now conceded by the leaders of both houses of Congress irrespective of the question as to whether it is advisable to overhaul the tariff at this time. The deficit for the fiscal year just ended, amounting to \$23,500,000, is no cause for alarm in view of the handsome surplus in the Treasury, but Secretary Shaw's prediction that for the year ending June 30 next the shortage will exceed \$40,000,000 has convinced conservative public men that measures should be taken next winter to provide additional revenue equal at least to the prospective deficit.

The so-called "stand-pat" element in both houses is busy devising plans for raising the required additional revenue without disturbing the tariff. The plan which is now being urged with much energy involves the reimposition of the stamp taxes embraced in schedules "A" and "B" of the Spanish War revenue act. These schedules produced an average of about \$42,000,000 in 1899 and 1900, or just about enough to close the prospective gap between revenues and expenditures during the coming year. It is probable that the growth of the country in the past five years has been sufficient to warrant the prediction that these taxes would now produce at least \$45,000,000. Of this sum, nearly \$40,000,000 would be derived from stamp taxes on business documents of all kinds, while the balance would be obtained from taxes on patent medicines, perfumery, &c. These it is urged can well afford to stand the small impost, which under the old law amounted to 2½ per cent. of the retail price.

An Unpopular Proposition.

The proposition to settle the revenue question by reimposing the Spanish War taxes does not, however, appear to be popular among the business men of the country, judging by the strong protests which are being received here by Senators and Representatives and high Government officials. The objection to the levying of the documentary stamp taxes is not based upon the idea that such taxes constitute a burden from a purely financial point of view, but rather that the experience during the Spanish War demonstrated that the annoyance to the business public created thereby was out of all proportion to the results secured by the Treasury. Almost every conceivable form of business document was liable to a stamp tax, ranging from 1 cent up to \$10, and every business man to avoid violating the law was obliged to provide himself with a printed schedule. Several of the most important taxes levied under the Spanish War revenue act were declared by the Supreme Court to be unconstitutional, including those on export bills of lading, manifests, &c., which were held to be illegal taxes on exports, and the Treasury Department has not yet completed the work of refunding these charges. The stamp tax on checks was especially annoying, as were also the taxes on telegraph messages and express receipts.

One of the arguments against the reimposition of the documentary stamp taxes is the general belief that if again imposed they would become a permanent part of the revenue system, although heretofore classed as emergency war measures. The prompt action of Congress in repealing these taxes, even before they could

well be spared, is pointed to as showing the pressure that was brought to bear against their retention for a day longer than absolutely necessary, and it will be remembered that when the Ways and Means Committee reported the bill repealing the war revenue act it based its action upon the pledge given at the beginning of the war that these vexatious imposts would be wiped out at the earliest possible date. The opponents of the plan of re-enacting these taxes feel that in the face of this record Congress must hesitate before restoring them to the statute books.

Reciprocity to Be Considered.

It is the best opinion here that the Congressional leaders will give early attention to the question of the establishment of a new basis for the negotiation of reciprocity treaties. This opinion is based upon the apparent intention of the Administration to give favorable consideration to such projects for reciprocity treaties as may be offered by foreign countries, and especially by Germany and Austria-Hungary. The most significant recent development is the decision of the officials of the Departments of Commerce and Labor and Agriculture to take an active part in the National Reciprocity Conference to be held in Chicago, August 15 and 16. While the Departments will refrain from assuming a position on any of the controversial phases of the subject, they will be officially represented by their leading experts on the tariff, trade statistics, foreign commerce, agriculture, &c. Secretary Metcalf of the Department of Commerce and Labor has even gone so far as to promise the promoters of the conference that if he is able to complete his official and private business in San Francisco in time to do so he will attend and deliver an address. The managers of the conference will extend a pressing invitation to President Roosevelt to attend the conference and give it the benefit of his views. Because of the President's engagements, it is hardly likely that he will be able to accept the invitation, but it is stated by those who have the matter in hand that if he is unable to be present he will send a letter "expressing his views on the general subject of reciprocity along the lines marked out in the last speech delivered by President McKinley at Buffalo, in September, 1901."

The Projected German Treaty.

The German Foreign Office had planned to submit to the United States some time in July a project for a reciprocity treaty, but the death of Secretary Hay will probably delay these negotiations. Mr. Root will not enter actively upon the duties of his new office until about the middle of September, and it is believed that the formal tender of a treaty will be deferred until about October 1. In the meantime trade organizations in Germany are laying before the German Reciprocity Commissioners a large amount of data with regard to the needs of German producers in the way of concessions in the present American tariff. This information is being carefully guarded so that the German demands may not become known in the United States in advance of the presentation of the completed project. In view of the understanding that the tender of the treaty will be accompanied by an official intimation to the effect that if the United States declines to enter into negotiations the maximum rates of the new German tariff will be levied on American products after March 1 next, the officials here express a very lively interest in the details of the German project, which it is understood is rapidly nearing completion.

The action of the Merchants' Association of New York in adopting resolutions strongly favoring a reciprocity treaty with Germany has attracted much attention here, and in connection with similar appeals from other commercial bodies in all parts of the country will have a tendency to induce the State Department to negotiate a treaty, leaving with Congress the responsibility for its ratification or rejection.

W. L. C.

Geo. M. Kenyon announces that beginning August 1 he will occupy new quarters at 600 and 601 Pioneer Press Building, St. Paul, Minn., removing from 109 Endicott Arcade.

NEWS OF THE WORKS.

Iron and Steel.

Ralph L. Morgan, Worcester, Mass., has abandoned the plan of establishing a steel plant on Presque Isle, near Toledo, Ohio.

The plant of the South Chester Tube Company, Chester, Pa., which has been idle for some time, will start up again on July 31. Employment will be given to about 600 men.

The plant of the Boston Steel & Iron Company at Medford, Mass., has been sold at auction for the upset price, \$44,000. The property was bid in by the mortgagees, the National Bank of the Republic and the Mount Vernon National Bank, both of Boston.

The Ellwood Ivins Tube Works, Oak Lane Station, Philadelphia, is distributing among the trade a sample section of seamless steel tube, together with data regarding same, as well as the references to their special seamless brass, copper, aluminum tool steel and low carbon steel tubing, which are made by them in a variety of sizes.

The Page Woven Wire Fence Company, Monessen, Pa., will soon have completed the new wire mills which have been building for some time. The concern will install special machinery for the manufacture of steel wire springs, for which there is a large demand in this country, as well as for export trade. The plant is so constructed that it can be extended at any time that orders for wire springs should exceed its present capacity. Specially skilled workmen to be employed are largely brought from the West, where they had formerly been employed by a company that owned this business and which at the time took much of its open hearth spring steel wire from the Monessen works.

The Maryland Rail Company, Cumberland, Md., whose mill was partially wrecked last week by the bursting of a fly wheel, is stated to have purchased the rail mill of the Schonthal Iron & Steel Company in that place and will start it up next Monday.

General Machinery.

The Vilter Mfg. Company, Milwaukee, Wis., manufacturer of ice making machines and Corliss engines, is erecting a \$3000 addition to its plant.

The annual meeting of the stockholders of the Janesville Machine Company, Janesville, Wis., was held recently, and the following officers were elected: L. B. Carle, president; Hiram Merrill, vice-president; John G. Rexford, treasurer; W. F. Bosworth, secretary; J. A. Craig, general manager.

The plant of the Johnson Forge Company, South Wilmington, Del., has been sold at receivers' sale for \$80,000 to John R. Johnson of Philadelphia, who is the head of the company and its principal creditor.

Charles M. Morris and his brother, Silas H. Morris, have recently organized the Plano Machine Works, Plano, Ill., erecting a building along the Burlington tracks for the manufacture of several wood working machines which have been invented by the Morris brothers. These machines include the Dalsey one-man saw, in which the weight of the operator assists in the manipulation of the machine; a double hoop planing machine that is claimed to be able to plane from 5000 to 20,000 hoops a day; a double hoop sawing machine for one operator, and a pointing and lapping machine which will point both edges of several hoops at the same cut, as well as a hoop coiling machine. The same firm is preparing to place on the market a line of porch and lawn swings of unique design.

The Lewis Foundry & Machine Company, Groveton, Pa., has installed in its new plant a 60 x 60 inch x 30 foot motor driven planer, built by the G. A. Gray Company of Cincinnati, Ohio. The machine is self contained, being motor driven and is conceded to be one of the best tools of its kind on the market, enabling the company to handle castings of the largest size. The concern has just shipped a motor driven guillotine shear, with a capacity to cut 1 1/4 x 48 inches, to the National Tube Company, Lorain, Ohio. It also shipped at the same time a motor driven lever shear for the cutting of scrap. While not running double turn, a great amount of work is being put out.

The Western Maryland Railroad Company, Baltimore, Md., contemplates the building of new shops, the location for which will not be decided probably for some time to come.

The Mineral Ridge Mfg. Company, Mineral Ridge, Ohio, manufacturer of mine equipment, has not yet completed specification for the machinery for its new plant. The principal part of the power equipment has been purchased and will consist of a 14 x 36 inch extra heavy duty Scottsdale Corliss engine and a 150 horse-power McNaul water tube boiler.

A free site and \$14,000 bonus will be given to the Illinois Machine & Foundry Company, Chicago, as inducement for its removal to Decatur, Ill. It employs 150 workmen.

The Monon Railroad is adding a new building to its shops at Lafayette, Ind., to be used as a tool shop. Another building will be erected for machinery with which to make difficult repairs.

The Anderson Tool Company has been incorporated at Anderson, Ind., with \$10,000 capital stock, for the manufacture of electrical and other tools, machinery and appliances. The directors are Edward S. Len, Clement H. Hoover and Chester G. Browne.

The Photo Card Machine Company has been incorporated at Indianapolis, Ind., with \$30,000 capital stock, for the manufacture of machines for cutting, beveling and embossing. The directors are Thos. F. Hatton, Fred. D. Stilz and Willis K. Miller.

Power Plant Equipment.

The Western Pennsylvania Motor Company, recently incorporated at Harrisburg, Pa., under an electric railway charter, is now securing right of way for its railway from New Castle to Pittsburgh by way of Ellwood City, Pa. The company is controlled by the Pittsburgh capitalists who own the Pennsylvania Power Company, at Ellwood City, Pa., and operate a large dam and also are building a large steam plant at Ellwood City for producing electricity for light and power. The company already has 10 or 15 miles of transmission line erected and is selling all the power it can produce and has a large market for more. As soon as its new steam plant is completed it will erect other large dams on the Connoquenessing River, as it owns both sides of the river bank for miles. The river has a rapid fall between high, rocky banks, and stone for the dam is procured at low expense.

The Finchbaugh Mfg. Company, York, Pa., manufacturer of gas and gasoline engines, is erecting a new plant 65 x 100 feet, two stories, with a 50-foot basement, making part of the building three stories. It will be equipped with modern machinery, including an electric traveling crane, all to be operated with the company's own gas and gasoline engines. The machinery has all been purchased.

F. E. Pfannmueller & Co., Chicago, state that the demand for second-hand power equipments is unusually heavy for this time of year and announce the following recent sales: A 5000 cubic foot blowing engine for delivery at Secaucus, N. J.; 300 horse-power engine for Revelstoke, Canada; 200 horse-power Corliss engine for Orange, Texas; 350-kw. Westinghouse compound engine and a 150-kw. alternator for Fort Smith, Ark.; 350 horse-power Corliss engine for Glenview, Ill.; 200 horse-power electric light plant, including an Allis-Chalmers condensing engine, for Tomahawk, Wis.; two 250-foot air compressors, one for Madison, Wis., and one for Dodgeville, Wis.

The Guebeshe mine, Ocotlan, Morelos, Mexico, has just purchased and installed a 12 x 14 inch double cylinder Denver hoist and a 50 horse-power Erie City Iron Works boiler, with all the accessories necessary to equip a hoisting plant of this size in a thoroughly up to date style, including houses for the engine and boiler, blacksmith shops, stables and residences. C. C. Goldberg is in charge of the mine.

The Beaver Mfg. Company, Milwaukee, Wis., mentioned in last week's issue, will have for its chief product the manufacture of gasoline motors, notably for automobiles. As stated before, the controlling interest in this company has been secured by T. J. Neacy and Walter Read, of the Filer & Stowell Mfg. Company. S. W. Watkins, former president of the National Electric Company, is secretary and treasurer.

The Power Specialty Company reports during the past few months a large number of orders for superheaters for a great variety of purposes, such as electric lighting and power plants, water works pumping stations, manufacturers, chemical works and gas works. Among a long list of recent orders are the following: Louisville water works, Ridgewood pumping station, Brooklyn; Wilmington, Del., water works; Milwaukee water works, Sears, Roebuck & Co., Mandel Brothers, Western Cold Storage Company, Allen B. Wrisley Company, Chicago; Little Rock Railway Company, Philadelphia Electric Company, Terre Haute Traction Company, Wheeling Electric Company, Nassau Light & Power Company, Fairmont & Clarksburg Railway Company, Independent Light, Heat & Power Company, El Paso, Texas; Pfister & Vogel Leather Company, Milwaukee; American Locomotive Works, Schenectady; Acker Process Company, Niagara Falls; Eaton, Cole & Burnham Company, Bridgeport, Conn.; International Harvester Company, Illinois Steel Company, Tide Water Oil Company, United States Naval Gun Factory, Washington, D. C. Several of these orders are for equipments of batteries of six or eight boilers of from 400 to 600 horse-power. The Washington Navy Yard order is for five 300 horse-power superheaters to be attached to Babcock & Wilcox boilers to give superheat of 125 degrees at 200 pounds pressure. This contract is a duplicate of two others which have already been completed by the Power Specialty Company for the Government at that point and completes the equipment of the 15 boilers in the power house at the navy yard.

The plans for the \$1,000,000 power house to be erected at Ft. Wayne, Ind., by the Ft. Wayne & Wabash Valley Traction Company call for 10,000 horse-power to be furnished by turbine engines placed on a solid base immediately over the boiler, so as to have the distance traveled by the steam the shortest possible. A large traveling electric crane will be part of the equipment. The building will be of pressed brick with the interior of glazed white tile.

The Oakdale Light, Heat & Power Company has been incorporated at Peru, Ind., with \$50,000 capital stock, by R. H. Bauslog, A. N. Dukes and R. A. Edwards.

Dr. D. Glinther and others have secured a franchise from the city of North Manchester, Ind., for the transmission of electric light, heat and power. The new company proposes to use the water power at Laketon, five miles distant.

The Bay State Machine Company, Erie, Pa., expects to complete the building of its new shop by the middle of August. The company, which manufactures gas and gasoline engines, has purchased practically all the machinery.

Foundries.

Harlan & Hollingsworth Corporation, Wilmington, Del., has sold its foundry property to the Philadelphia, Baltimore & Washington Railroad Company and will in the future secure its castings from foundries in the vicinity of its plant.

Henry Orme's Sons, St. Paul, Minn., have secured a 5-acre site in Minneapolis, where they will establish an iron and brass foundry. A specialty will be made of gray iron and semisteel castings. The plant will be under the management of F. J. W. Orme.

The United States Cast Iron Pipe & Foundry Company, New York, contemplates moving its Bridgeport, Ala., plant to Chattanooga, Tenn.

The new foundry building which is to be erected by the Scranton Steam Pump Company, Scranton, Pa., to replace the one recently destroyed by fire, will be of steel and brick construction, 60 x 400 feet. The new building will be equipped with electric cranes, air molding machines and other modern foundry appliances.

Fires.

The plant of the Sills-Eddy Mica Company, Newark, N. J., was destroyed by fire July 23. The loss is placed at \$50,000.

The plant of the Charleston Machine & Mfg. Company, four miles from Bethlehem, Pa., was destroyed by fire July 20. The loss on machinery is stated to be \$15,000.

The building at 43-49 Beverly street, Boston, was badly damaged by fire July 23. The principal losers were Aronowitz & Siegel, manufacturers of couch frames; E. H. Allen, manufacturer of fans and dust collectors; C. L. Egan, sheet metal worker, and George H. Carter, manufacturer of wooden mantels. The A. M. Wood Company, dealer in and manufacturer of carriage hardware, occupied one floor of the building as an adjunct to its building next door, and suffered considerable loss by water, but is doing business as usual. The power plant on the premises was not seriously damaged.

Hardware.

The Fulton Mfg. Company, Fulton, Ky., has been incorporated with a capital stock of \$15,000 to take over the plant of the Swiggart Mfg. Company. The line of manufacture includes whipsaws, golf sticks, stirrups, gun rods and handles for chisels, hammers, &c. Two two-story buildings, 45 x 90 feet and 20 x 30 feet, will be erected. Equipment for the plant has about all been purchased. J. T. Stubblefield is general manager of the company.

Henry Rowe, formerly manager of the Rowe Brothers Mfg. Company, Allegan, Mich., has organized a new company to be known as the Henry Rowe Mfg. Company, at Newaygo, Mich. The company will make dowel rods and pins, moldings, &c., for the furniture trade, wood turnings for the furniture and hardware trade, and shipping crates for fruits and vegetables. The plant formerly occupied by the Converse Mfg. Company has been leased with its equipment.

The rear building of the B. B. Mfg. Company's plant at Davenport, Iowa, which was devoted to the manufacture of the improved Dewey hog waterer, was quite seriously damaged by fire July 17. Shipments will not, however, be delayed more than a few days.

The New Castle Stamping Company, New Castle, Pa., has provided for additions and improvements to the plant by a bond issue of \$150,000. George L. Patterson, assistant cashier of the National Bank of Lawrence County, is president; C. J. Kirk, vice-president, and T. F. Morehead, treasurer. The capital stock of the company is \$200,000.

The Newburyport Silver Company, Newburyport, Mass., manufacturer of silver ware, is to remove its business to Keene, N. H., the change being made necessary by the demand for larger manufacturing facilities. A part of the large factory building at Keene formerly occupied by the Trinity Cycle Company has been leased. The capital of the company has recently been increased to \$50,000.

The Chapin-Stephens Company, Pine Meadow, Conn., is installing a 500-light electric plant to supersede gas in lighting its factories and offices. The company has also just installed a new 60 horse-power boiler for heating and kiln drying purposes. Several important improvements in the buildings and power equipment were also made during the annual two weeks' July shut down for inventory and repairs.

The Dunn Mfg. Company has been incorporated at Anderson, Ind., with \$25,000 capital stock, to manufacture cheese cutters. The directors are Harry F. Dunn, Benjamin D. Emanuel and Joseph H. Millsbaugh.

Miscellaneous.

The Rockford Match & Machine Mfg. Company, Rockford, Ill., has been organized for the purpose of making matches and

match machinery. Details are withheld by the company for the present, but it is expected that a factory with a capacity of 1000 gross of matches a day and a shop for the building of match machinery will be erected shortly.

The Griffin Wheel Company, Chicago, has increased its capital stock from \$4,000,000 to \$5,000,000.

The Eagle Lamp Company, Middleton, Mass., refiller of incandescent lamps, has been incorporated in Massachusetts under the same name, with a capital stock of \$25,000. The officers are: President and clerk, A. A. Wilkins; treasurer, E. F. Strong, and directors, these officers and A. W. Peabody.

The Vellumold Paper Company, East Pepperill, Mass., has completed plans for the erection of a new factory at Greendale, Worcester, Mass., where 46,000 square feet of land has been purchased. The buildings will be one story and basement, the main structure 30 x 304 feet, with an ell 24 x 64 feet. The order has been placed with the B. F. Sturtevant Company, Hyde Park, Mass., for the engine and blower system. The company will manufacture vellumold paper, a parchment-like substance, which is claimed to be water and oil proof. One of its principal uses will be for the packing of valves, though it is said to have a wide range of usefulness. Experiments have been conducted for the past five years at Worcester and Pepperill. The officers of the company are: President, Waldo Spaulding, Pepperill; vice-president, D. H. Kendrick, Amherst, Mass.; secretary and treasurer, A. D. Rice, Worcester; directors, these officers and George S. Clark, Amherst; William A. Davenport, Greenfield, Mass., and A. D. Putnam, Worcester.

The Hart & Hegeman Mfg. Company, Hartford, Conn., manufacturer of the Hart electric switches, is to erect a new factory at the corner of Capitol avenue and Broad street, Hartford, the building to be 60 x 190 feet and three stories. The company's factory is now located at 32 Union place, and when the new building is completed the present quarters will be abandoned. Orders for new equipment have been placed.

The Ludlow Mfg. Company, Ludlow, Mass., textile manufacturer, is to erect a large addition to its plant this season, to consist of a building 66 x 177 feet and two stories, and another extension 66 x 97 feet and four stories.

The L. M. Ericson & Company, Limited, of Stockholm, Sweden, manufacturer of telephones and electric apparatus, has let contracts for a branch factory, to be erected at Buffalo, N. Y., at a cost of \$100,000. Work upon the buildings has already been commenced.

The Eastern Concrete Machinery Supply Company, Akron, N. Y., has been incorporated, James R. Thomas and H. P. Thomas, directors. The company will furnish machinery and supplies for making concrete blocks, ornamental bricks, &c.

The Colonial Brass Company, Cleveland, Ohio, has purchased for \$71,000 the plant and equipment of the Geneva Automobile Company, Geneva, Ohio, and will move its Cleveland plant to Geneva about the middle of August. The building at Geneva is of brick, four stories, and 80 x 200 feet. The purchase of this building will more than double the capacity of the company for the manufacture of brass specialties, wood fixtures and apparatus for conveying and dispensing all kinds of liquids. A brass foundry is now being built at Geneva in connection with the new plant.

A sand-lime brick plant, costing \$35,000, is now in successful operation at North Judson, Ind., making brick out of sand containing 95 per cent. of silica. It is in charge of Paul Tafel, brick machine expert of Cleveland, Ohio, and has a capacity of 30,000 bricks a day. F. C. Tracy is president of the company.

Samuel Murdock, general manager of the Logansport & Wabash Valley Gas Company, Wabash, Ind., announces that the company will build a large fuel gas plant to supply Wabash, Logansport and Peru.

The Spicer Universal Joint Mfg. Company, Plainfield, N. J., has incorporated with a capital stock of \$35,000 to take over and continue the business of C. W. Spicer. The company manufactures Spicer dust proof universal joints and shafts. C. N. Spicer is president; D. E. Tittsworth, vice-president, and Asa Randolph, secretary and treasurer.

Listers Agricultural Chemical Works, Newark, N. J., has let contracts for rebuilding the part of its plant which was recently destroyed by fire, and has already provided for the greater portion of new machinery that will be required.

The Cast Iron Brazing Company, with a plant at 1040 Ridge avenue, Philadelphia, has recently been formed for the purpose of brazing cast iron under a process patented by Jno. Mossip and William Magrady; Charles and Joseph Donovan, together with the patentees, are the present members of the company, which it is expected will shortly be incorporated. They will engage in the general business of brazing at the above location, while shop rights will be sold for the use of the process in other locations.

The Regenerated Cold Air Company, Boston, Mass., has moved its shop from the plant of the Meisel Press Mfg. Company, Roxbury, to its own shop at 944 Dorchester avenue. The company manufactures air cooling and humidifying apparatus.

The Iron and Metal Trades

There has been an active movement in many branches of the Iron and Steel trades, and manufacturers are facing the future with increasing confidence.

Apparently the buying in Pig Iron is over for the present. It stopped rather abruptly in the East with the end of last week and there is a breathing spell in the Cincinnati market. It is estimated that the total sales during the two weeks of lively purchasing will aggregate about 500,000 tons for the whole country, the great bulk of the business having been for delivery during the next 60 and 90 days. It has led Southern makers who had sold between the range of \$10.50 and \$11.25 to advance their prices to \$11.75 to \$12 for No. 2 at Birmingham, some of them holding for more. This has given the Northern and Eastern producers the chance to book considerable business at their old asking prices, at which they were marketing very little. In other words the market is steady and firm after the rush of buying instead of being weak and nominal, as it was before it.

Relatively very little has been done in Bessemer Pig in the Valleys and the hope has been expressed that the leading interest might enter the market. This is not likely for the next few months, and it should be observed also that a large outside Steel company in the Central West is carrying quite a stock of Bessemer Pig.

A somewhat curious phenomenon is the appearance as buyers of Steel Billets of a number of large Steel works, the tonnage wanted in the open market running close to 30,000 tons. The explanation may be that what is wanted is Open Hearth Steel, of which the Steel works in question make relatively small quantities.

A number of railroads have bought Steel Rails during the last ten days, the total figuring up close to 100,000 tons. Included in the purchases is from 25,000 to 30,000 tons for the Missouri Pacific system, 17,000 tons for the Spokane International, 12,000 tons for the Kansas City Southern, 6000 tons for the St. Louis & Southwestern and 5000 tons for the Somerset Railway. The fact that the mills have a heavy tonnage makes them indifferent to business in Light Rails unless prices are better, and the market in this branch is firmer at \$23 to \$25.

An interesting inquiry is that which has come to the coast shipyards for two large boats for the Pacific. The Atlantic Coast yards have been so hungry for so long a time that this indication of a flow of work is very encouraging. The boats will need 8000 tons of Steel, but there will be some difficulty in getting the Shapes in time.

In the Structural trade the question of deliveries is the all absorbing topic. A tidewater fabrication shop has just placed an order for upward of 15,000 tons of Shapes, about 5000 tons of which is to be applied to export requirements. Bids for the new bridge across the East River are to be opened on August 10. The tonnage involved is a little short of 42,000 net tons.

During the past ten days there has been some heavy selling of Steel Bars. One interest has booked 70,000 tons, largely for makers of agricultural machinery. It has been noted, however, that a somewhat unusual quantity of Spring Steel Bars has been called for, thus reflecting the activity in the car building industry.

The Wire trade is stirring a little. The usual time for the replenishing of requirements by the jobbing and other interests is August 15. The buying spell may set in as early as August 1 this year.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

July 26, July 19, June 28, July 27.

1905. 1905. 1905. 1904.

PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$16.25	\$16.25	\$16.50	\$14.25
Foundry Pig No. 2, Southern, Cincinnati	14.50	13.75	14.00	12.00
Foundry Pig No. 2, Local, Chicago	16.25	16.25	16.25	13.25
Bessemer Pig, Pittsburgh	<i>14.85</i>	14.85	15.35	12.50
Gray Forge, Pittsburgh	<i>14.50</i>	14.50	14.85	11.85
Lake Superior Charcoal, Chicago	16.50	16.50	16.50	14.50

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	23.00	23.00	21.00	23.00
Steel Forging Billets, Pittsburgh	23.00	25.00	25.00	....
Steel Billets, Philadelphia	26.50	26.00	26.00	24.00
Steel Billets, Chicago	28.00	28.00	27.00	22.00
Wire Rods, Pittsburgh	32.00	32.00	32.50	28.00
Steel Rails, Heavy, Eastern Mill	28.00	29.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	14.00	13.50	13.00	10.00
O. Steel Rails, Philadelphia	16.00	16.00	15.25	11.50
O. Iron Rails, Chicago	18.75	17.75	17.25	14.50
O. Iron Rails, Philadelphia	18.50	17.50	18.00	13.75
O. Car Wheels, Chicago	14.75	14.25	14.25	11.00
O. Car Wheels, Philadelphia	14.50	14.00	14.50	10.50
Heavy Steel Scrap, Pittsburgh	14.25	14.00	13.50	11.00
Heavy Steel Scrap, Chicago	13.50	13.00	12.25	9.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.48½
Common Iron Bars, Chicago	1.50	1.50	1.50	1.30
Common Iron Bars, Pittsburgh	1.55	1.55	1.55	1.30
Steel Bars, Tidewater	1.64½	1.64½	1.54½	1.49½
Steel Bars, Pittsburgh	1.50	1.50	1.40	1.35
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.74½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.74½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.50	1.50	1.50	1.32½
Skelp, Sheared Steel, Pittsburgh	1.55	1.55	1.55	1.32½
Sheets, No. 27, Pittsburgh	2.20	2.15	2.20	2.00
Barb Wire, f.o.b. Pittsburgh	2.25	2.25	2.25	2.45
Wire Nails, f.o.b. Pittsburgh	1.80	1.80	1.80	1.85
Cut Nails, Mill	1.80	1.80	1.80	1.65

METALS:

Copper, New York	15.12½	15.00	15.00	12.62½
Spelter, St. Louis	5.40	5.25	5.07½	4.75
Lead, New York	4.60	4.55	4.55	4.10
Lead, St. Louis	4.50	4.50	4.47½	4.00
Tin, New York	32.90	31.75	30.70	26.87½
Antimony, Hallett, New York	13.50	13.00	11.50	7.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.49

Chicago.

FISHER BUILDING, July 26, 1905.—(By Telegraph.)

General trade conditions in the Iron and Steel market are unusually strong and active for midsummer. Fewer factories than usual are closed down and those that did close down are inactive a shorter period of time than is customary. Consumption of Iron and Steel products is therefore going on at a larger rate than is usual at this period of the year. The recent advance in Pig Iron to the \$11.50, Birmingham, basis, as announced in last week's report, has been followed by another advance, placing the price of Southern Iron squarely on the basis of \$12 for No. 2, f.o.b. Birmingham. A good many sellers are of the opinion that the upward course of the markets has not yet been checked and that it will not be many weeks before \$13 rather than \$12 is the minimum selling basis. Large buying accompanied these advances, but heavy tonnages are yet to be bought and furnaces are as a general thing so well filled with business that they take a very independent stand in reference to further inquiries. It looks as if the only thing necessary to force prices considerably higher than they are to-day is the re-entry into the market of the United States Steel Corporation as a buyer of Iron. This would counteract the weakness still in evidence in the Mahoning and Shenango valleys. Finished products are in excellent demand, particularly Structural Steel, Plates and Rails, and in all of these products mills are approaching their producing limit, some of them already being out of the market until next spring. The situation on Structural Steel is particularly tense. Bars are becoming more active and there is a decreasing tonnage of Steel Bars available at 1.40c., Pittsburgh. Bar Iron locally is firmer in tone, owing chiefly to the rapidly advancing price of Scrap. Pipe and

Sheets are still weak, but there is some improvement in tone in evidence. Cast Pipe has been given new strength by the advancing price of Pig Iron. Old Materials have witnessed another sharp advance in the case of Old Iron Rails being \$1 higher than last week. Prices on Scrap generally rule \$1.50 to \$2 a ton higher than they did a month ago. Coke has gained in strength. Wire products are seasonably inactive, but the undertone is strong and prospect of a good fall business is excellent.

Pig Iron.—The advancing market of last week did not stop at \$11.50, Birmingham, but toward the close of the week found every Southern furnace as far as can be learned squarely on the \$12 basis, with some asking \$12.50 for the fourth quarter. Local Northern furnaces have not yet advanced their prices beyond the \$16 minimum, but nevertheless are securing \$16.25 to \$16.50, delivered, locally on smaller lots. Until the Ohio furnaces shall have booked a sufficient home tonnage to prevent them from figuring in the Chicago markets it is not likely that local furnaces will advance beyond present figures, as a further advance would admit of Ohio competition. Present prices, too, on Northern Iron are as high as they well can be in proportion to the cost of Southern Iron delivered here. It is estimated that not far from 100,000 tons of Iron have been booked by Chicago sellers during the recent advancing period, most of which is for delivery in either the third quarter or second half of the year. An earnest inquiry is developing for prices on contracts extending to next July, but producers as a rule are chary about booking any considerable tonnage of this character because they anticipate steadily advancing prices. There is some disappointment expressed at the tonnage secured from the jobbing foundry interests. Purchases made by such foundries have been as a rule limited to relatively small lots where it was expected there would be a general rush for contracts running at least to January. The impression prevails that jobbing foundries are more prosperous than they have been for a year or more and that they have heavy orders already booked which are not covered by Pig Iron purchases. The following schedule of prices represents the current market for third-quarter delivery, in some cases also covering the whole of the second half of the year:

Lake Superior Charcoal.....	\$16.50 to \$17.00
Northern Coke Foundry, No. 1.....	16.75 to 17.00
Northern Coke Foundry, No. 2.....	16.25 to 16.50
Northern Coke Foundry, No. 3.....	15.75 to 16.00
Northern Scotch, No. 1.....	17.25 to 17.50
Ohio Strong Softeners, No. 1.....	17.30
Ohio Strong Softeners, No. 2.....	16.80
Southern Silvery, 4 to 6 per cent. Silicon	16.65 to 17.65
Southern Coke, No. 1.....	16.15
Southern Coke, No. 2.....	15.65
Southern Coke, No. 3.....	15.15
Southern Coke, No. 4.....	14.90
Southern Coke, No. 1 Soft.....	16.15
Southern Coke, No. 2 Soft.....	15.65
Southern Gray Forge.....	14.65
Southern Mottled and White.....	14.40
Malleable Bessemer.....	16.50 to 16.75
Standard Bessemer.....	16.80 to 17.05
Jackson Co. and Ky. Silvery, 6 to 8 %	18.30 to 18.55
Jackson Co. and Ky. Silvery, 8 to 10 %	20.30 to 20.55
Alabama Basic.....	16.15 to 16.65

(By Mail.)

Billets.—The few interests that have any Billets to sell continue to quote and to receive from \$28 to \$30 for Forging Billets. Bessemer Rolling Billets are hardly a quotable commodity in this market because generally the demand is extremely limited and the larger interests buy on an annual contract, making weekly quotations unnecessary. The same is true of Sheet Bars, for which no demand is present in the Chicago market.

Rails and Track Supplies.—Western roads are now vying with each other in their desire to purchase large quantities of Rails at a time when deliveries are necessarily delayed because of the full order books at the mills. It has been stated by the leading Rail interest that if deliveries could be made within reasonable time there would be no difficulty in booking in a few hours' time orders for 300,000 tons of Standard Section Rails in Chicago alone. As it is the inquiry for Rails is very active, aggregating fully 100,000 tons, and during the week just closed round sales have been made by the Pittsburgh and Ohio mills of the leading producer. Demand for Light Section Rails is increasing and Western mills are already about two months behind their orders. The premiums asked on small orders by Pittsburgh mills have not been followed as yet by an advance in prices quoted by Western interests. The temporary and rather unexpected weakness in Spikes referred to recently is still in evidence, but Western mills are booked so far into the future that they do not participate in the low quotations named by Pittsburgh producers. Prices on Standard Section Rails are firm at \$28, f.o.b. mill, with full freight to destination. Light Section Rails down to 12-lb. Sections are offered at \$24 to \$27 a gross ton, f.o.b. mill, while 10-lb. and 8-lb. are offered at \$28 and \$29. Angle Bars are unchanged at 1.40c. to 1.50c. Spikes are rather weak at 1.70c. to 1.75c., f.o.b. mill, in car lots, Eastern mills offering 1.70c. and Pittsburgh mills holding at 1.75c.

or above. Track Bolts are quoted at 2.40c. to 2.50c., base, Square Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lbs. above car lot mill prices.

Structural Material.—All the Structural mills of the leading producer are full, not only for the balance of the year but well into the spring, and the only relief in sight to producers of Beams, Angles and Channels comes from independent mills. The Buffalo mill is still making from four to six weeks' shipment on Plain Materials, and the Eastern Steel Company's new mill is able to make equally prompt shipment, but the surplus demand for Structural Materials is so great that it is thought to be a matter of a few weeks rather than months until these mills, too, shall be booked far ahead. Official prices for delivery from mill, f.o.b. Chicago, in car lots, are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.76½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.76½c.; Angles, larger than 6 inches on one or both legs, 1.86½c.; Beams, larger than 15 inches, 1.86½c.; Zees, 3 inches and over, 1.76½c.; Tees, 3 inches and over, 1.81½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work. Store prices on Angles, Beams and Channels range from 2.10c. to 2.50c., according to quantity on hand in store or obtainable from mill.

Plates.—There is no change in the situation since last week's report except that the tendency locally is for deliveries to become more and more delayed. Prices are unchanged and firm, as follows: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Sheared and Universal Mill Plates, Tank quality, 6¼ to 14 inches, inclusive, 10c. below these prices; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange quality, 25c. extra.

Sheets.—There is a slight improvement in the general tone of the Sheet market since last week's report, and while prices actually quoted still range from \$2 to \$4 a ton below the official quotations named by the leading producer, there begins to be shown a disposition by independent mills to pick and choose between customers and to name advanced prices on inquiries of a less desirable character. Actual prices paid to independent mills for current requirements range about as follows, though prices are so irregular that \$1 a ton higher or lower could easily be accounted for: Blue Annealed, Nos. 9 and 10, 1.81½c. to 1.86½c.; Box Annealed, Nos. 18 and 20, 2.11½c. to 2.16½c.; No. 27, 2.31½c. to 2.36½c.; No. 28, 2.41½c. to 2.46½c., with the customary differentials between gauges. Store prices are based on a minimum of 2.10c. for No. 10 Blue Annealed, 2.50c. for Nos. 18 and 20 Box Annealed, 2.65c. for No. 27 Box Annealed and 2.75c. for No. 28 Box Annealed. Galvanized Sheets are quoted in car lots from mill at about the following prices, some mills asking a little more and some offering at \$1 a ton less: No. 10, 2.41½c. to 2.46½c.; Nos. 17 to 21, 2.81½c. to 2.86½c.; No. 27, 3.31½c. to 3.36½c.; No. 28, 3.51½c. to 3.56½c. Store prices on Galvanized Sheets are as follows: Nos. 10, 12 and 14 are selling at from 3c. to 3.10c., Nos. 22 and 24 at from 3.05c. to 3.15c., No. 27 at from 3.50c. to 3.65c. and No. 28 at from 3.70c. to 3.95c., with intermediate gauges in proportion and with customary differentials for widths and lengths.

Bars.—The contracting movement in Steel Bars, particularly with the large implement users, is beginning to assume form, and the statement is made by the leading producer that new contracts are made no lower than the full 1.50c. basis. The going prices to-day on Iron Bars range from 1.50c. to 1.55c., base, Chicago, in car lots, with a good deal of difficulty on the part of producers in getting the higher price. The International Harvester Company is a large seller of Steel Bars on the open market and is meeting all legitimate competition, whether in the form of contracts or open bids. We quote Iron Bars, 1.50c. to 1.55c.; Steel Bars, 1.66½c., both half extras; Hoops, 1.81½c., rates, full extras; Soft Steel Angles and Shapes, 1.76½c., half extras, and Hard Steel Angles and Bars at about 10c. below the price of Soft Steel. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.20c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Merchant Steel.—This is between seasons for both buyers and sellers, and business is naturally very quiet. Current prices are unchanged, as follows, officially at least: Smooth Finished Machinery Steel, 1.91½c.; Smooth Finished Tire, 1.86½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6¼c. to 8c.; special grades of Tool Steel, 13c.

and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots in base territory.

Merchant Pipe.—The ruling selling price of base sizes of Merchant Pipe, $\frac{3}{4}$ to 6 inches, from store, is on the basis of 76 per cent. discount, Chicago, for reasonably large lots and 75 per cent. for the smallest, with 66 and 65 per cent. discount on Galvanized Steel Pipe. Iron Pipe is sold about \$3 a ton higher than Steel in both Black and Galvanized. The price at which jobbers buy in Chicago either from the leading producer or from independents is, of course, below these figures.

Boiler Tubes.—The tone of the Tube market is unabated in strength and both the railroads and the contract boiler shops, as well as the large manufacturers of boilers, are giving the mills liberal specifications on contracts. Official prices are as follows, f.o.b. Chicago, in car lots: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.85. Store prices are, nominally at least, unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1 $\frac{1}{4}$ inches.....	40	35	42 $\frac{1}{2}$
1 $\frac{1}{4}$ to 2 $\frac{1}{4}$ inches.....	50	35	35
2 $\frac{1}{4}$ inches.....	52 $\frac{1}{2}$	35	30
2 $\frac{1}{2}$ to 5 inches.....	60	47 $\frac{1}{2}$	42 $\frac{1}{2}$
6 inches and larger.....	50	35	..

Cast Iron Pipe.—The new strength in Pig Iron is reflected in a firmer tone in the Cast Iron Pipe market, though actual prices have not yet been advanced. No lettings of any consequence can be recorded for the current week, though the routine business is satisfactory and a number of deals are being figured on. The following prices represent figures that will be quoted on car lots and greater, large tonnages of course securing lower prices: Water Pipe, 4-inch, \$29; 6, 8 and 10 inch, \$28; 12-inch and larger, \$27, per net ton, with \$1 extra charged for Gas Pipe. Large tonnages bought by municipalities on a competitive basis bring out considerably lower prices.

Coke.—Coke prices are a little stronger, in sympathy with higher prices on Pig Iron, and \$2.50, at the furnace, or \$5.15, Chicago, is the open price with sellers of Connellsville Coke for the 72-hour Foundry grade. Somewhat better than this, though, is done in some instances. Foundry Coke from less favored regions is offered at from 25c. to 50c. lower than Connellsville, and furnace grades of Coke range from \$1.85 to \$2 at the ovens. Wise County, Va., Foundry Coke is still offered at \$2.25, at the ovens, or, with the special Louisville & Nashville freight rate, \$4.50, Chicago.

Old Materials.—Prices continue to advance and are already out of proportion to the cost of Pig Iron and to the selling price of products into which Scrap Iron enters. It is still a dealers' market, the highest bidders being as a rule the large dealers, who evidently plan to store large quantities of materials in the hope of securing higher prices later on. Consumers refuse to believe that they will be forced to pay present prices or higher prices for any considerable tonnage, as it is known that all the large consumers in this district are already well supplied with Old Materials and that a very large tonnage is being held up by the Illinois Central Railroad and some other smaller roads which have for a long time staid out of the market and have been accumulating stocks which they expect to offer at higher prices later on. The Scrap accumulated by the Illinois Central is already estimated to be not far from 30,000 tons, and when the time comes for this to be offered to buyers it will test the market severely. A large list was sold this week by the Chicago, Burlington & Quincy, prices given below representing about the figures obtained. In many cases it secured our highest quoted prices. The following quotations represent the current prices, Chicago delivery, car lots or greater, which are being paid by consuming interests:

Old Iron Rails.....	\$18.75 to \$19.25
Old Steel Rails, 4 feet and over.....	14.00 to 14.50
Old Steel Rails, less than 4 feet.....	14.00 to 14.50
Heavy Relaying Rails, subject to inspection	23.00 to 23.50
Heavy Relaying Rails, for side tracks..	19.50 to 20.00
Old Car Wheels.....	14.75 to 15.25
Heavy Melting Steel Scrap.....	13.50 to 14.00
Frogs, Switches and Guards.....	13.00 to 13.25
Mixed Steel.....	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates.....	\$16.00 to \$16.50
Iron Car Axles.....	21.00 to 21.50
Steel Car Axles.....	16.00 to 16.50
No. 1 Railroad Wrought.....	14.50 to 15.00
No. 2 Railroad Wrought.....	13.50 to 14.00
Locomotive Tires, smooth.....	14.50 to 15.00
Railway Springs.....	12.75 to 13.25
Shafting	15.00 to 15.50
No. 1 Dealers' Forge.....	10.50 to 11.00
Wrought Pipes and Flues.....	11.00 to 11.50
No. 1 Cut Bushelling.....	10.00 to 10.50
Iron Axle Turnings.....	10.50 to 10.75
Soft Steel Axle Turnings.....	10.50 to 11.00
Machine Shop Turnings.....	10.00 to 10.50
Cast Borings.....	8.00 to 8.50
Mixed Borings, &c.....	8.00 to 8.50
No. 1 Mill.....	9.25 to 9.50
Country Sheet.....	7.50 to 8.00
No. 1 Bolters, cut to Sheets and Rings..	10.00 to 10.50

No. 1 Cast Scrap.....	13.00 to 13.50
Stove Plate and Light Cast Scrap.....	10.50 to 10.75
Railroad Malleable.....	12.50 to 13.00
Agricultural Malleable.....	12.00 to 12.50

Metals.—With the exception of Copper, which is $\frac{1}{8}$ c. higher, prices are unchanged since last week. Casting Copper is quoted at 15c. to 15 $\frac{1}{2}$ c. and Lake at 15 $\frac{1}{2}$ c. to 15 $\frac{3}{4}$ c., both in car lots, with small lots selling about $\frac{1}{8}$ c. higher. Pig Tin is now quoted on the basis of 32 $\frac{1}{4}$ c. to 33 $\frac{1}{4}$ c. for car lots and as high as 34c. in small lots. Spelter is quoted at 5 $\frac{1}{2}$ c. for car lots and 5 $\frac{3}{4}$ c. to 6c. for small lots. Lead is quoted in 50-ton lots at 4.55c., in car lots at 4.60c., and 5c. to 5.25c. in small lots. The new Sheet Zinc schedule is based on \$7, La Salle, for car lots of 600-lb. casks; car lots, Chicago, are sold on the basis of \$6.75, with small lots selling at from \$7 to \$7.50 per 100 lbs. Prices of Old Copper and Brass are as follows: Copper Wire, 13 $\frac{1}{4}$ c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12 $\frac{1}{4}$ c.; Red Brass, 11 $\frac{1}{4}$ c.; Red Brass Borings, 9 $\frac{1}{4}$ c.; Yellow Brass, Heavy, 8 $\frac{1}{2}$ c.; Yellow Brass Borings, 7 $\frac{1}{2}$ c.; Light Brass, 7c.; Lead Pipe, 4 $\frac{1}{4}$ c.; Tea Lead, 3.85c.; Zinc, 4c.; Pewter, No. 1, 19 $\frac{1}{4}$ c.; Block Tin Pipe, 25c.

Philadelphia.

REAL ESTATE TRUST CO. BUILDING, July 25, 1905.

The improvement noted in last week's report has been further confirmed by the events of the past few days. The demand is increasing in all departments, and while there is no expectation of a runaway market, buying will no doubt be on a large scale and prices somewhat higher. This seems to be inevitable. Since March there was but little new business, comparatively speaking, yet consumption has kept along at a high rate, so that contracts on which deliveries were being made have become very nearly exhausted. Consumption is beginning to increase again, and promises to be the largest that the trade has ever known. Of course something might intervene to modify this view of the situation, but apart from contingencies of that kind the volume of business must be enormous. The country was never richer than it is to-day, while the tendency to expansion to meet its increased requirements is not only fully warranted, but is absolutely necessary to facilitate trade movements. What would have been ample capacity five years ago would now be totally insufficient, and unless all indications are misleading the utmost limit on present capacity will be inadequate two or three years from now. Even the nearly 2,000,000 tons per month produced during a portion of this year has not been sufficient to depress the market for more than a few weeks, and now with full knowledge of what can be done buyers are again becoming anxious about their supplies. This shows the strong position that the trade holds in comparison with former years. Twenty to twenty-two million tons of Pig Iron per annum is regarded as a very conservative tonnage for this year, yet it was not long ago when half of that tonnage was considered an extremely large output and likely to be the maximum on that swing of the pendulum. The growth of the country has always been underestimated and the growth of the Iron trade in proportion to the growth of the country has been underestimated to a still greater degree; so that apart from any special movement the Iron and Steel trades are as certain as anything can be to expand beyond what has been recorded in the past. Conditions seem to be favorable for another forward movement in the next few weeks, but for the present without any essential change in prices.

Pig Iron.—There is more demand than there has been at any time during the past several weeks, and sales have been on a larger scale than at any time since early in the year. Prices are strong, not because of any special movements in this territory, but largely on account of the withdrawal of Southern competition and the better feeling generally in all other districts. It would be difficult to buy any large quantities of Iron at last week's prices, although sellers are anxious not to lose trade and therefore discriminate very closely in making quotations. Orders for early shipments have the preference, although those who usually buy for three to six months' deliveries are accommodated within reasonable limits. There is a general impression that prices are working toward higher figures, but no pronounced advance is looked for in the immediate future. Southern furnaces are quoting \$1 more for No. 2 X than they were a week ago, but as some heavy lots were taken before the advance there is no market at the higher figure. It relieves the competition with Northern Irons, however, which are usually quoted at an advance of 25c. to 50c. from the low point which was made during last month. The average of recent sales of No. 2 X Foundry would be about \$16.25, and of Mill Irons \$14.50, Philadelphia, but relatively higher prices are being paid at interior points. Mill Irons, for instance, are 50c. to 75c. dearer in the Harrisburg and Susquehanna districts, while about 25c. to 50c. would represent the advance for the more easterly districts. It will take time to bring quotations to a parity in the various markets, but it is believed that June will show the lowest

quotations during 1905, although they may not get back to the high figures realized during the first quarter. On the whole the market may be regarded as satisfactory. Sellers can get business, while prices promise to show gradual improvement and at the same time buyers find it a fairly easy market to work on, as prices are not high and give promise of at least a reasonable margin on whatever business they may undertake. Prices are a little higher than they were a week ago, but there is no disposition to ask more than conditions appear to warrant, which is about as follows for Philadelphia and other nearby points:

No. 1 X Foundry.....	\$17.25 to \$17.50
No. 2 X Foundry.....	16.5 to 16.50
No. 2 Plain.....	15.75 to 16.00
No. 3 Foundry.....	15.00 to 15.50
Standard Gray Forge.....	14.75 to 15.00
Basic.....	15.00 to 15.50
Low Phosphorus.....	20.25 to 20.50
Southern No. 2 X. rail.....	15.50 to 16.00
Southern No. 2 X. on dock.....	15.00 to 15.50
Southern Gray Forge.....	14.50 to 15.00

Ferromanganese.—There is some inquiry and business could probably be done under \$47 on dock. There is some pressure to sell and prices do not appear to be as firm as they were two or three weeks ago, although \$47 is the asking figure.

Steel.—The market is very active and prices have an upward tendency. Small lots command about \$27, and it is something very exceptional that can be had at less than \$26.50.

Muck Bars.—There is very little demand, but sellers are looking for business at about \$28, f.o.b.

Plates.—There is nothing out of the ordinary in the Plate trade, although it is in good condition. The incoming orders show an increase in tonnage week by week, and while the individual lots are not particularly heavy the tonnage shows a steady increase. Prices unchanged as last quoted:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, over 14 inches wide.....	1.73½	1.78½
Tank, Bridge and Boat Steel, rectangu- lar Plates, 14 inches wide and under.....	1.63½	1.68½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The follow- ing extras apply: Per 100 pounds extra.		
3-16 inch thick.....	\$0.10	
Nos. 7 and 8, B. W. G.....	.15	"
No. 9, B. W. G.....	.25	"
Plates over 100 to 110 inches.....	.05	"
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"

Structural Material.—The demand is very heavy and mills are in many instances almost swamped with business. Ordinary specifications can be had with a fair degree of regularity, but others cannot be had in most cases until late in 1905, and in others mills refuse to accept business simply because they cannot handle it. Prices are unchanged, however and are quoted as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.65c. to 1.68c.

Bars.—There is a pretty steady demand for Bar Iron, and while the market looks quiet it is only apparently so. All the prominent mills are doing about as much as their capacity will permit, and prices are firm on a 1.50c. base, Pittsburgh. Inquiries are rather more numerous, and it is not unlikely that there will be a good increase in business during the coming month. Steel Bars are steady at the same figure as Refined Iron—viz., 1.50c., Pittsburgh, or 1.63½c., Philadelphia.

Sheets.—The market is a little flat, but there is a fair inquiry and prospects indicate a better movement before long. Prices unchanged as follows: 18 to 20 gauge, 2.30c.; 22 to 24 gauge, 2.40c.; 25 and 26 gauge, 2.50c.; 27 gauge, 2.60c., and 28 gauge, 2.70c.

Old Material.—The market is somewhat erratic, strong at some points and a little easier at others. Some holders ask \$16 to \$16.50 for No. 1 Steel, but buyers are not willing to pay over \$15.50, and from that to \$16 would probably fairly represent the market. No. 1 Railroad Scrap is dearer and would bring \$17 to \$17.50; some holders ask \$18. Bids and offers for lots delivered in buyers' yards are about as follows:

Scrap Rails.....	\$16.00 to \$16.25
No. 1 Steel Scrap.....	15.50 to 16.00
Old Steel Axles.....	18.50 to 19.50
Old Iron Axles.....	22.00 to 23.00
Old Iron Rails.....	18.50 to 19.50
Old Car Wheels.....	14.50 to 15.00
Choice Scrap, R. R. No. 1 Wrought.....	17.00 to 18.00
No. 1 Yard Scrap.....	14.00 to 15.00
Long and Short.....	13.50 to 14.00
Machinery Scrap.....	14.00 to 14.50
Wrought Iron Pipe.....	12.50 to 13.00
No. 1 Forge Fire Scrap.....	13.00 to 14.00

No. 2 Light, Ordinary.....	10.00 to 11.00
Wrought Turnings.....	11.00 to 12.00
Axle Turnings, Choice Heavy.....	12.50 to 13.00
Cast Borings.....	8.00 to 8.50
Stove Plates.....	11.00 to 11.25

The Eastern Steel Company of Pottsville, Pa., has now located its Philadelphia office in the Pennsylvania Building, Fifteenth and Chestnut streets, in charge of P. R. Foley, who was for many years with Cofrode & Saylor of Pottstown, Pa. The company is now rolling 4 x 4 and 3 x 3 Angles, also 7-inch Beams and Channels. It expects to start the large mill in about six weeks and will then be able to furnish a full assortment of sizes.

Cleveland.

CLEVELAND, OHIO, July 25, 1905.

Iron Ore.—Shipments down the lakes have not increased as far as wild cargoes are concerned, the contract boats taking most of the material. All concerned report that Ore is coming down too rapidly to continue the present rate of speed without a serious congestion at the furnaces. Lake rates are now easier. Shippers who are still moving material by wild boats are paying 75c. from Duluth to Ohio ports, 70c. from Marquette and 60c. from Escanaba. There are a few sales of small lots of Ore at the old prices, but early sales were so heavy that there is little expectation of anything further until fall.

Pig Iron.—The recent heavy buying of Foundry Iron has stiffened the market considerably, leaving it uneven, however. The price is governed now almost entirely by the amount of business booked by the furnace to which application is made for material. The recent break after the long deadlock brought out some business as low as \$13.75, at the furnace. In one instance Iron was sold by an Ohio furnace at a price which would have made the Valley quotation \$13.50 had the furnaces in that territory competed, but the lowest price known to have been made by Valley furnaces was \$13.75 for No. 2. Not much went for less than \$14. Present prices cover a considerable range. Some No. 2 Foundry has sold here recently at \$14.25 in the Valleys, while one or two furnaces have made sales at \$14.50, at which they are now holding for second-half delivery. Other furnaces which are more nearly sold up are holding for higher prices, one being willing to take nothing less than \$15. A few furnaces are so well sold up that they are not looking for business for the immediate future. A strong tone is noted in the Bessemer, Basic and Malleable markets without much of a change in the price. The Coke market is extremely easy, with most makers now willing to accept \$2.50 for the best grades of 72-hour Foundry Coke for the last half of the year and \$2 at the oven for Furnace Coke. The reports from the trade are that foundries are increasingly busy, a good demand for Castings being reported from almost every quarter.

Finished Iron and Steel.—Contract buying of Steel Bars, which has been expected for the past few weeks, has started in, and if the present rate is continued the big interests will have covered in the next six weeks or two months. It is known that in this territory 50,000 tons of Steel Bars have been bought on yearly contracts during the past week, augmenting the tonnage taken the week before. In addition to the known tonnage there are reports that the total buying will carry the aggregate for this territory nearer to 60,000 tons during the past week. There are some good inquiries now in the market. Buyers are not stopping at the price. In addition to the heavy tonnage which has been recently closed there is a large amount of business holding over on contracts at the lower prices. The market holds at 1.50c., Pittsburgh, for both Bessemer and Open Hearth. There has been a resumption of the buying in Bar Iron also, indicating that within a short time the mills will have business and to spare. Prices have been somewhat uneven, with low point at 1.45c., at mill, and high point at 1.55c., at mill. The strength of the Structural market continues. It is becoming more difficult to get orders through the mills on which delivery is to be completed this year, and buyers have consequently become somewhat insistent on covering their needs for the first quarter of next year. The larger mills have taken a stand against selling so far in advance. The smaller mills, mostly in the East, which are selling in this territory are placing material here which with the premium and freight rate added to the price makes the quotation from \$5 to \$7 a ton above the market. One order went on the latter basis in the past week. The minimum premium now being paid seems to be about \$3 a ton. There is a fairly good demand for Standard Rails, one lot being sold for traction purposes in the week amounting to about 3000 tons. Some other projects in view point to further fair sized orders presently. The market has been just fair for Sheets, with prices holding steady. The future of this trade does not seem to be very well defined, there being some hesitancy on the part of buyers. Quotations out of

stock hold as they have been at 2.15c. for No. 10 Blue Annealed and 2.65c. for No. 28 One Pass Cold Rolled. Galvanized Sheets out of stock are based on 3.65c. There is still a good demand for Billets. The Plate trade has been holding about steady, with fair orders but no boom.

Old Material.—The better tone to the Pig Iron market has brought about a buying movement in Scrap. The dealers had been taking a good deal of material in the dull spell on a speculative basis, expecting prices to advance. With the better demand they have been able to put prices up nearly 50c. a ton, in some cases the advance being greater. Iron Car Wheels and Iron Axles remain in the strictly nominal list, with most of the other lines showing good sales and advancing prices. In Steel Rails some sales have been made at \$14.50 in the Valley. Quotations are revised as follows, all gross tons, f.o.b. Cleveland: Old Steel Rails, \$13.50 to \$14; Old Iron Rails, \$20 to \$21; Heavy Melting Steel, \$14. All net tons: Cast Borings, \$7.50 to \$8; No. 1 Busheling, \$12 to \$12.50; No. 1 Railroad Wrought, \$15; Iron Axles, \$21 to \$22; No. 1 Cast, \$13; Stove Plate, \$9; Iron and Steel Turnings and Drillings, \$9 to \$9.50.

Cincinnati.

FIFTH AND MAIN STS., July 26, 1905.—(By Telegraph.)

Pig Iron.—Under the stimulus of the heavy buying of the past two weeks the Southern furnace interests have further advanced prices, and close upon the advance to \$11.50, Birmingham, came advices that strictly Birmingham Irons would be held at \$12. Some furnaces in the South having a freight rate advantage are selling at \$11.75, Birmingham, so that the market to-day on Southern Iron is represented by a quotation of \$11.75 to \$12. The bulk of the business that has been booked has been at prices around \$11 and we hear of only a few late sales at the higher prices. Northern Irons have not participated in the advance and some sales have been made recently by Southern Ohio furnaces as low as \$13.50 at furnace. Late information, however, is that \$14 at furnace is now the minimum. There is considerable difference of opinion as to the effect of the advance on the market. Some believe that the buying is practically over for the present and that but little business can now be done at the higher level of quotations. Sales agencies report but few inquiries now pending. It is a matter of comment in the trade that Southern Iron makers have put their prices to a point that shuts them out of competition with Northern Iron in Ohio territory. Gray Forge Iron, which has been freely offered in the recent past, has not fully participated in the strength shown in the other grades, and for spot shipment as low as \$10.25, Birmingham, can be done on this grade. For third-quarter delivery \$11 is maintained. As is usual in case of such sudden advances in prices buyers who failed to cover when the opportunity was presented to them are now seeking protection of the old quotations. The situation is unsettled and the advance is not firmly established, although the market is quoted at the higher figures. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$15.00 to \$15.25
Southern Coke, No. 2.....	14.50 to 14.75
Southern Coke, No. 3.....	14.00 to 14.25
Southern Coke, No. 4.....	13.75 to 14.00
Southern Coke, No. 1 Soft.....	15.00 to 15.25
Southern Coke, No. 2 Soft.....	14.50 to 14.75
Southern Coke, Gray Forge.....	13.00 to 13.75
Southern Coke, Mottled.....	12.75 to 13.50
Ohio Silvery, No. 1.....	19.00 to 19.25
Lake Superior Coke, No. 1.....	15.65 to 15.90
Lake Superior Coke, No. 2.....	15.15 to 15.40
Lake Superior Coke, No. 3.....	14.65 to 14.90

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$18.00 to \$18.25
Lake Superior Car Wheel and Malleable	17.75 to 18.00

Coke.—The demand is fairly active and there is quite a tonnage being sold. Connellsville Foundry Coke is selling at \$2.25 to \$2.40, f.o.b. ovens. Furnace Coke at ovens that reach the Alabama Iron fields for prompt shipment is scarce and commands strong prices.

Plates and Bars.—Structural Shapes and Plates continue active with a good demand. Bar Iron is steadier, but not quotably changed. We quote f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in smaller lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—There is considerable activity in the market among dealers and brokers. Dealers demand strong prices and brokers cannot interest buyers at the figures demanded by the dealers. Market is unsettled, but not quotably changed. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$13 to \$14 per net ton; No. 1 Cast Scrap, \$10 to \$10.50 per net ton; Iron Rails, \$16 per gross ton; Steel Rails, rolling mill lengths,

\$12 per gross ton; Relaying Rails, 56-lb. and upward, \$21 per gross ton; Iron Axles, \$18 to \$18.50 per net ton; Car Wheels, \$14 to \$15 per gross ton; Heavy Melting Scrap, \$11 per gross ton; Low Phosphorus Scrap, \$14 to \$14.50 per gross ton.

Pittsburgh.

PARK BUILDING, July 26, 1905.—(By Telegraph.)

Pig Iron.—The local Pig Iron market has been very quiet, although there seems to have been good buying in some other districts, taking Iron from furnaces which usually supply much Iron to this market. We note a sale of 3000 tons of Basic Pig by a Valley furnace to a Pittsburgh consumer at \$14, Valley, or \$14.85, Pittsburgh; but no sales of Bessemer worth mentioning. Valley furnaces are asking \$14.25 to \$14.50 at furnace for Basic, but might do a trifle lower on prompt Iron. It is estimated that there are about 75,000 tons of Bessemer Iron in merchant furnace yards in the two valleys. The important sellers of Bessemer have practically withdrawn from the market by quoting \$14.50 to \$15 furnace on Bessemer, which prices are simply nominal. In Foundry Iron there has been little doing, but several furnaces report that they are oversold and are not quoting in this market, their sales having evidently been made elsewhere. We quote No. 2 Foundry at \$14.25 at furnace, or \$15.10, Pittsburgh, on a fair sized lot for early shipment, and Forge at \$13.65 to \$13.80, furnace, or \$14.50 to \$14.65, Pittsburgh. The market is in an uncertain position, as furnaces have been encouraged by the advance in Southern Iron, while local consumers are not more disposed than formerly to buy, being considerably less busy than they were.

Steel.—The situation in Billets and Sheet Bars is reaching an acute stage. As noted by mail three important Steel producers are themselves in the market for Billets, and there are no sellers of importance outside of the leading interests. We note a sale of 2000 tons of Open Hearth Soft Steel Billets at \$24, Pittsburgh, and 1000 Bessemer Sheet Bars, long lengths, at \$25, Pittsburgh. The market is firm for August shipment as follows: Bessemer Billets, \$23 to \$24; Open Hearth, \$24 to \$25; Sheet Bars, Bessemer, \$25 for Long Length and \$25.50 for Cut Bars. These prices are actually being paid. Most July shipments are going at \$23 for Bessemer Billets and \$24.50 for Long Bessemer Bars. On sliding scale contracts Bessemer Billets are bringing nearly as much, since the June average of Bessemer Pig Iron sales were not much under \$16, Pittsburgh. The Shenango Valley Steel Works was started on last Sunday. Preparations are being made at the Columbus Steel Works, but it is not decided yet whether the works will actually be started.

(By Mail.)

The trade has shown a marked improvement in several respects since our last report. There has been a little more buying of Pig Iron and there is considerably more inquiry. A small Open Hearth plant in western New York has bought, and at least one of the large Steel producers is coming into the market. There has been better buying of Steel, both Billets and Sheet Bars, and asking prices are 50 cents to \$1 a ton higher than at last report, while some Steel has been sold at the new figures. Three Central Western Steel producers have been sounding the market for 14,000 tons of Open Hearth, 10,000 tons of Open Hearth or Bessemer, and 2000 tons of small Bessemer Billets, respectively, with a view of making purchases for early shipment, which well shows the temper of the market and the shortness of the supply.

The inquiries for 25,000 and 30,000 tons of Standard Rails mentioned in last report have since resulted in orders being placed, and some small tonnages have been placed besides. In some instances premiums are being obtained for prompt shipment of Rails.

There has been active contracting for Merchant Steel Bars by the agricultural implement makers, and in the past ten days fully 70,000 tons of Merchant Bars have been sold to these interests on contracts running through the season, or though next June, at the regular price of 1.50c., Pittsburgh.

The programme for curtailment of production of Wire, decided upon at a recent meeting, is being rigidly carried out. The large independent local interest is closed for this month, while the leading interest has this month been running at only about one-third capacity. Stocks are being rapidly reduced and demand for Wire products shows a slight improvement, particularly in Nails.

Ferromanganese.—Despite reports to the contrary, there is no serious danger of another scare in Manganese Ores or Ferro. The local interest, which has had its two regular Ferro and Spiegel furnaces down, will start them within 30 days and has an ample supply of Ore ahead. The furnaces are not now idle on account of any insufficiency of Ore. There is a fairly good supply of Ferro. We quote the market if anything a shade easier, at \$49 to \$49.50 for small lots and \$48 on a large lot, for domestic or foreign 80 per cent., delivered.

Rods.—While quiet the market is firm on account of the stronger position of Billets, and we quote \$32 on Wire Rods and \$33 on Chain Rods. It might be difficult to buy a large tonnage at these prices.

Steel Rails.—The 30,000-ton Rail inquiry mentioned last week resulted in an order from the Gould system. The 25,000-ton inquiry from another road is still pending. The local mill has besides sold in the past week one lot of 12,000 tons and another of 3000 tons and has sold altogether since last report about 50,000 tons. There are no fresh large inquiries in the market at present, but many small ones, particularly for early delivery. These include one for 2100 tons for September for a branch to one of the Western roads. The Republic Iron & Steel Company is now as well filled up as the older Rail mills so far as deliveries in the next two or three months are concerned. In some instances premiums have been paid on good sized orders for Standard Rails for early shipment. We quote Standard Sections at \$28 at mill in large lots for forward delivery and Light Rails at \$22.50 to \$25, according to weight.

Skelp.—The market continues extremely quiet, there having been no improvement in demand for Pipe. Quotations are largely nominal and we repeat last week's figures, as follows: Bessemer Grooved Skelp, 1.50c. to 1.55c.; Open Hearth, 1.55c. to 1.60c.; Sheared, \$1 advance; Grooved Iron Skelp, 1.60c.; Sheared, 1.67½c. to 1.70c., maker's mill.

Plates.—As expected, there was no change made in Plate prices at last week's meeting of the mills. Early deliveries are difficult to secure, particularly on Narrow Plates, on which the mills have specifications, which fill them up for many months. On wider Plates they are filled up for several months. We quote prices firm and without change, as follows: Tank Plates, ¼ inch thick, 6¼ to 14 inches wide, 1.50c., base; over 14 inches wide and up to 100 inches in width, 1.60c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges.....	\$0.10
Gauges No. 7 and No. 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ¼ of 1 per cent. is allowable. Pacific Coast base, 1.40c. f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Structural Material.—The leading interest has a larger tonnage of absolute business on its books than ever before, even at the height of the boom in 1902, the excess being greater than its increase in capacity meanwhile. On new business some mills are not making any promises of delivery inside of six months, while others are promising in from three to five months. The Eastern mills, as usual at such times, are asking and obtaining premiums for early shipment. The local mills are doing nothing but taking business at regular figures for such deliveries as they can make. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.60c.; Angles, 8 x 8 and 7 x 3½ inches, 1.70c.; Zees, 3-inch and larger, 1.60c.; Tees, 3-inch and larger, 1.65c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—There has been a slight but clearly marked improvement in demand from the mills during the week. Stocks in jobbers' and consumers' hands have been further reduced. Production at present is larger than is generally assumed in the trade, as the leading interest is operating fully two-thirds of its Sheet capacity, if not more, while the independents are doing about the same. The market for Sheet Bars has been advancing rapidly, being by this time about in the control of the leading interest. Already a sale of 1000 tons of Long Bars has been made at \$25, f.o.b. Pittsburgh, and it would not be surprising if the market advanced to \$26. At this latter figure it would be practically impossible for an outside mill to shade the official price on Sheets, 2.40c. for Black, No. 28 gauge, and if this price were obtained it would represent an advance of about \$3 a ton above the lowest prices that have been made in the past couple of months. In the past ten days Spelter has advanced about 30c. a hundred, which is equal to

fully \$1 on the cost of making a ton of No. 28 Galvanized Sheets. We quote prices on Flat Sheets \$1 a ton higher all around, as follows: Black Sheets, box annealed, one pass through cold rolls, No. 24 gauge, 2.10c. to 2.15c.; No. 26, 2.20c. to 2.25c.; No. 27, 2.20c. to 2.25c.; No. 28, 2.30c. to 2.35c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.80c. to 2.85c.; Nos. 25 and 26, 3c. to 3.10c.; No. 27, 3.18c. to 3.23c.; No. 28, 3.40c. to 3.45c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.65 to \$1.75 per square, and Galvanized Roofing Sheets, No. 28 gauge, at \$2.85 to \$2.95 for 2½-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—The agricultural implement makers have contracted in the past ten days for fully 70,000 tons of Merchant Steel Bars for the season soon to begin, deliveries running to June 30 next. This business was all taken at the regular price of 1.50c., Pittsburgh, half extras. Much material is now going out to jobbers on new contracts recently taken at 1.50c., and the shading of this price has probably all disappeared. The mills are not disposed to sell for next year's delivery except to agricultural implement makers, who have a right to be protected through their season. Specifications have been very heavy and local mills are several weeks behind on these. We quote Steel Bars at 1.50c., base, half extras, f.o.b. Pittsburgh, in carload lots and over. In Iron Bars there is more activity and many of the mills are fairly well employed. They are not disposed to make forward contracts at present prices. We quote Common Iron Bars at 1.55c. to 1.60c., Pittsburgh, and 1.55c., Youngstown.

Hoops and Bands.—Some new business is coming in and an active market is expected shortly. Specifications are good on old contracts. We quote 1.50c. for Bands and full Band extras, and 1.65c. on Hoops.

Tin Plate.—There has been no improvement in demand for Tin Plate, and the mills are simply waiting for the improvement which must follow the reduction of stocks, with production as light as it is now. The great bulk of the leading interest's Tin Plate mills are idle and many of them will not be in physical condition to run before the early part of August, irrespective of demand. Nearly half the independent capacity is idle. We quote the regular market at \$3.55 for 100-lb. Cokes, f.o.b. Pittsburgh, subject to the 5-cent rebate, terms 30 days or 2 per cent. off for cash in ten days.

Merchant Steel.—We note no change in this market. Prices continue fairly firm and we quote: Flat Sleigh Shoe, 1.50c. to 1.55c.; Toe Calk Steel, 2c. to 2.05c.; Smooth Finished Tire, 1.65c. to 1.70c.; Cutter Shoes, 2.15c. to 2.20c.; Railway Spring Steel, 1.65c. to 1.70c.; Crucible Tool Steel, 5½c. to 8c. for ordinary grades; special grades, 12c. and upward. Shafting is in fair demand, discounts being 50 per cent. off in carloads and 45 per cent. in less than carloads. For delivery at certain competitive points these discounts are slightly shaded by one or two concerns.

Spelter.—The market has taken a very sharp advance, and the lowest quotation to-day is 5.40c., St. Louis, or 5.52½c., Pittsburgh, representing an advance of fully 30c. a hundred in two weeks. The market has been quiet this week so far as actual sales are concerned, and this is attributed principally to the fact that this is a dull period for consumption, rather than to the advance deterring consumers from buying, since there is an expectation in some quarters that the market may go higher, say ¼c.

Merchant Pipe.—Conditions are unchanged since last report. Trade is very dull, but hopes are still entertained of an improvement next month. Business continues to be done at a couple of points under official prices, which remain as follows, to jobbers in carload lots:

	Merchant Pipe.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
½ and ¾ inch.....	67	51	65	49
¾ and 1 inch.....	71	59	69	57
1 to 6 inches.....	75	65	73½	63½
7 to 12 inches.....	70	55	68½	53
Extra strong, plain ends, ½ to ¾ inch.....	60	48	58	46
¾ to 4 inches.....	67	55	65	53
4½ to 8 inches.....	63	51	61	49
Double extra strong, plain ends, ½ to 8 in.....	56	45	54	43

Boiler Tubes.—Demand for Boiler Tubes is excellent and in striking contrast to conditions in Merchant Pipe. Some mills are behind in deliveries and some contracts, which are being filled as rapidly as possible, run for several months yet. Discounts are:

	Boiler Tubes.	Iron.	Steel.
1 to 1½ inches.....		41	44
1½ to 2½ inches.....		41	56
2½ inches.....		46	58
2½ to 3 inches.....		53	64
6 to 13 inches.....		41	56

Coke.—There is nothing new in the Coke market, but prices are well maintained at \$1.85 for third and \$2 to \$2.10 for fourth quarter, for strictly Connellsville Furnace Coke, with a little going now and then for spot shipment at about \$1.80. Strictly Connellsville 72-hour Foundry Coke is selling at \$2.35 to \$2.45. Outside makes of Coke are held at prices ranging down to \$1.50 for Furnace and \$2 for Foundry.

dry. Crushed Coke is \$1.90 to \$2, all prices being f.o.b. ovens.

Iron and Steel Scrap.—It is doubted if all the Baltimore & Ohio offering last week was allotted. At any rate Pittsburgh dealers who bid what they considered good prices got very small tonnages. The tone of the whole Scrap market is a trifle better. In Melting Scrap it is decidedly better, as the Open Hearth Steel mills are very busy and are bound to be good buyers in the near future. Occasional lots of Heavy Melting Scrap can be picked up at \$14.25, but for any fair sized tonnage from \$14.50 to \$15 would have to be paid. The market for the time being is very quiet, and the highest sale we note is \$14.37½, on 1000 tons. Rolling Mill Scrap is still quiet. We quote prices as follows: No. 1 Wrought Scrap, \$15 to \$15.50; Cast Borings, \$8 to \$8.25; Bundled Sheet Scrap, \$12.50 to \$13; Cast Scrap, \$14 to \$14.25; Wrought Iron Turnings, \$12.75; Old Steel Rails, short lengths, \$14.25 to \$14.75; long lengths, \$14.50 to \$15, all gross tons, delivered, Pittsburgh.

Johnson-Peter Company, central sales agent for Baldwin Steel Company, 107 John street, New York, manufacturer of Hudson high speed tool steel, has opened an office in the House Building, Pittsburgh. The same concern is also sale agent for Tyler Tube & Pipe Company, Washington, Pa.

Birmingham.

BIRMINGHAM, ALA., July 24, 1905.

The market has apparently recovered all depression below the \$12 basis for No. 2 Foundry. The lowest price secured on the late decline was a \$10.25 basis, but it just touched that point and quickly rebounded to \$10.75, at which probably 20,000 tons were landed. After this it was an easy go to obtain \$11 and then \$11.25 and \$11.50. The Pipe interest that started the buying at \$10.25 followed the upward movement and made its last purchase of 15,000 tons at the equivalent of \$11.50 for No. 2. The aggregate of its purchases will foot up over 50,000 tons. Some of the Iron was for delivery in the fourth quarter, but the bulk of it will be taken in 90 days. As rapidly as the information of these purchases spread a buying feeling developed, and there was a scramble to get in near bottom. Confidence came that did not higgler over prices; but it just seemed as if the trade was satisfied the buying wave had come and wanted to float into port with the tide. Some buyers were here when the movement started, having come to investigate the situation. Some of them recognized that delay was dangerous and took on lots of varying dimensions.

Prices readily responded to advances asked. It was an elastic market, and the best buyers were those who the week preceding could see no good in it. To give some idea of the activity it can be stated that the sales of the Sloss Company in the month, up to the 20th, amounted to 84,000 tons, and of this amount 67,000 tons were sold after the 14th. A conservative estimate of the total sales for the past two weeks places them at 175,000 tons.

Most of the purchases were made for delivery in the next 60 and 90 days, but there were some fortunate enough to get in for delivery during the fourth quarter, and others wanted prices for delivery the first quarter of 1906. As far as can be learned no sales were made for that delivery. Whence came the buyers that absorbed such a large part of furnace yards' stock? The answer is, From all the buying districts. It seemed as if the army of consumers with rare unanimity had decided that the critical hour was near and there must be no delay. Besides those who are rated as buyers of round lots there was a large number who took Iron in varying lots from 1000 tons down to carloads. And these wanted nearby delivery, saying they must have that or be compelled to close their works. The stocks of this class of buyers are practically exhausted.

Prices on this movement varied a good deal and no one paid any attention to those of competitors. There was business enough for all and in some cases where the buyer hesitated or declined he missed his opportunity and came in at advanced figures. It is impossible to quote specifically the lots and prices. No. 2 Foundry ranged from \$10.25 up to \$12, with perhaps the greater volume of sales around \$11.

Outside of what the Pipe companies took not much of the lower grades went on a basis below \$11. There were so many orders for single grades or restricted to two grades that prices were relatively stronger for these. Take Gray Forge, for instance, which at the close of the preceding week could have been had of some sellers at \$10.50 for nearby shipment and is reported by one seller as being sold with reluctance at \$11.25 for fourth-quarter delivery. Another firm reports the sale of 1500 tons of Mottled Iron at \$10.50, for delivery third and fourth quarters. One of the orders filled by a merchant Pig Iron firm was for 300 tons to be shipped to the Isthmus of Panama. The rapid development and volume of the demand have been such that the further sales of four of our furnaces for nearby delivery and up to

October 1 will be very much restricted. Two say they will be out of the market for delivery up to October. One says its agents have been notified that it has only 7900 tons to offer for August, September and October delivery, and it comes pretty straight that two large interests are so well sold up to October that their offerings will be very light. But some Iron can yet be had in a comparatively small way. The sales of the Sloss Company are nearly three times its anticipated output for August and September. But when the selling commenced it was carrying by far the largest stock of any interest in the district. No sales of Basic Iron were reported. Late Saturday \$13 was named as the price.

The demand of the past two weeks has materially cleared the Iron situation, and it is well to bear in mind that some comparatively big holes are yet to be filled. All the requirements of the buyers of Iron have not yet been satisfied. Conservative members of the Iron trade express themselves as being well satisfied at the prevailing price and say they would be content to see this price steadily maintained. If a materially further advance occurs there will come the blowing in of furnaces that are waiting for the opportunity. There are a few changes in quotations for Scrap Iron that will be readily recognized in the figures following: Stove Plate is \$9.50, an advance of \$1 per ton; Heavy Cast is \$11, an advance of 50c. We quote: Old Steel Rails, \$13; Old Iron Rails, \$18; Open Hearth Steel Scrap, \$13.50; Iron Car Axles, \$16.50; Steel Car Axles, \$14.50; Old Car Wheels, \$14.50 to \$15.50; Relaying Rails, Light, \$22 to \$24; Relaying Rails, Heavy, \$24 to \$25; Railroad Wrought, \$15.50. There is more life in the trade than prevailed last week and a very fair trade was had.

Work on the addition being erected by the Dimmick Company is progressing rapidly and the company anticipates that in four weeks' time it will be completed and ready for operations. It quotes Pipe ranging from 4 to 6 inches at \$24 and other sizes at \$23, and has a fairly well filled order book, with expectations of a large business from now on. Others talk the same way regarding the prospects for a large business.

The new company in the process of formation for the making of Gas and Water Pipe is controlled mainly by Atlanta parties, and will be known as the American Cast Iron Pipe Company. It will build a \$225,000 plant and expects to be ready for business next spring and to employ about 400 men. The capacity will be 150 tons per day. Negotiations concerning other interests are under way, but their plans and intentions are not yet matured.

Labor Notes.

The Illinois Manufacturers' Association succeeded in defeating in the last Legislature a bill offered by labor and socialistic interests that was directed against organizations and associations of every kind designed to regulate and control business operations or correcting abuses. The bill was so framed that it applied only to employers' associations and very skillfully avoided including labor unions or associations of employees.

A law is now on the statute books of Illinois making it an offense punishable by fine or imprisonment, or both, for an employer of labor who has a strike at his plant to omit in any advertisement for help an explicit statement to the effect that there is a strike at his plant and that the new labor is required to take the place of strikers. A number of attempts have been made by the Illinois Employers' Association and other employing bodies to bring this one-sided law to a test, but in every case the State has failed to prosecute offenses or has non-suited bills. This policy was pursued apparently with the co-operation of the labor organizations, which wished to keep the law on the statute books as long as possible, even though satisfied that a test would make it unconstitutional and void.

The site for the new Cleveland Hippodrome at Cleveland, Ohio, has been secured at a cost of \$1,000,000. Plans for the new building will be drawn very shortly and the contract for the iron and steel structural work will be let in time to begin the actual work of construction soon after January 1. The structure will be about 200 x 278 feet, the stage being 110 x 164 feet. The theater will be the largest in the United States, seating 6000 people, and will have three galleries with inclines in the place of stairways.

The Machinery Trade.

NEW YORK, July 26, 1905.

The best indication of the fact that the machinery business throughout the country is in an excellent condition is the experience of those who have placed orders of late. Deliveries just now are slow, which in itself is indicative of the fact that there must be plenty of orders on hand. These conditions, machinery men say, will continue for some time to come, and at least through the so-called dull summer weeks. There have been some scattered inquiries from houses which heretofore have represented Japanese interests, and it is said "in the street" that it will not be long before there will be a revival of the extensive Japanese buying of some months ago. The foreign trade in general continues strong, and while there have been few noticeably large orders placed for export in and about New York of late there has been a good general export business, which makes it apparent that United States dealers are gaining ground with foreign trade.

The question of the adoption of the universal loose leaf catalogue which was indorsed by the Southern Supply and Machinery Dealers' Association at its recent convention has been taken up by the American Supply and Machinery Manufacturers' Association, which has headquarters at 309 Broadway, New York. It will be remembered that the Southern dealers decided to send out all their catalogues in uniform sizes and styles. It was agreed that the forms must not be larger than 5 x 8 inches, printed on one side only, allowing 1 3/4 inches on the left side for binding the sheets, each leaf to be punched with two 3/8-inch slot holes 4 1/2 inches from center to center. F. D. Mitchell, secretary and treasurer of the American Supply and Machinery Manufacturers' Association, has sent a communication to all the members of that organization inclosing a sample copy of a leaf of the catalogue after the style adopted by the Southern supply dealers and asking if the recipient expects to join in the movement. With a large proportion of the machinery dealers of the country using this style of catalogues, its advocates declare, the business of those who employ catalogues will be greatly facilitated. Among other advantages it will be a simple matter to insert up to date literature in all catalogues and discard material describing factory products which has become "dead wood." It is also claimed that small dealers who cannot send out entire catalogues will be able to send printed matter to prospective customers, which the latter can easily put on record. Buyers will also be spared the sight of a pile of variedly assorted books about their offices, as all the catalogues sent out in this manner will be of uniform size. It remains to be seen how the Eastern dealers will take to the plan, which naturally does away with any display of originality in binding and size, but it is thought that it has so many advantages that it will have as many advocates here as it has in the South.

Alfred H. Schütte's Exhibit at Liège.

Considerable interest is being shown by American machinery manufacturers just now in the exposition at Liège, Belgium. While the United States has not been allotted as much space as European countries, domestic machinery manufacturers have made the best of the chance offered them to display their products in competition with those of European countries. In fact this country has been given a comparatively small amount of floor space in the Machinery Exhibit, the entire area allotted to American manufacturers being but 1000 square meters, while Germany has been given five times that space, France 2000 square meters, and other European countries space in proportion to their importance in the machinery field. Forty-five per cent. of the area conceded to this country's machinery products has been taken by Alfred H. Schütte, and his exhibit, which is probably the most interesting in the American display, includes the products of 60 American manufacturers. It makes a decidedly representative showing, including as it does about everything conceivable in metal and wood working machinery as well as the small tool line, and the utmost care has been exercised in selecting machinery for exposition purposes by the representatives of Mr. Schütte. Nearly all the machines exhibited are shown in operation, and those who have seen the exhibit say that, considering also the machines shown by other American manufacturers, those who have been so deeply interested in having this country well represented at the exposition have succeeded well, regardless of the lack of space at their disposal. The Belgian offices of Alfred H. Schütte at Brussels and Liège have attended to the details of placing its exhibit as to allotting positions and arranging the display of the machines sent there in the most appropriate manner. The other details to be attended to in this country were carried out by T. H. Marburg, who is in charge of the New York office of the concern. Other American machinery men who have exhibits have been equally energetic in seeing to it that nothing but the best of American machinery products are shown at the European Exposition and interested visitors at the show send back enthusiastic reports of the appearance

and working of machines displayed by the United States manufacturers. Among the companies represented in the space taken by Alfred H. Schütte are:

Cincinnati Milling Machine Company, Cincinnati, Ohio; Becker-Brainard Milling Machine Company, Hyde Park, Mass.; Gould & Eberhardt, Newark, N. J.; Prentice Bros. Company, Worcester, Mass.; Landis Tool Company, Waynesboro, Pa.; Gisholt Machine Company, Madison, Wis.; Morgan Machine Company, Rochester, N. Y.; G. A. Gray Company, Cincinnati, Ohio; Greenlee Bros. Company, Rockford, Ill.; Hendey Machine Company, Torrington, Conn.; Berlin Machine Works, Beloit, Wis.; Cleveland Automatic Machine Company, Cleveland, Ohio; National-Acme Mfg. Company, Cleveland, Ohio; Acme Machine Company, Cleveland, Ohio; Baker Bros. Company, Toledo, Ohio.

The particular attention of American manufacturers who have taken an interest in the exposition has been drawn to the strenuous effort made by Germany to make a strong showing, and they take it as a decided indication that that country will be a stronger competitor of the United States in the machinery business, especially in Europe. No small satisfaction has been expressed with the general appearance of the American exhibits, which are attracting no little attention from foreign manufacturers and buyers.

Chicago Pneumatic Tool Company to Make McKiernan Drills.

Continuing its policy of expansion, the Chicago Pneumatic Tool Company, New York and Chicago, has practically closed a deal whereby it takes over another plant in addition to those recently acquired in this country and abroad. Negotiations have been completed whereby the company has secured an option on the plant, patents and business of the McKiernan Drill Company, thus adding a rock drill department, which is a new line of tools for the Chicago Pneumatic Tool Company to handle. While the McKiernan Drill Company will not be formally taken over in its entirety until October 1, pending final arrangements the Chicago Pneumatic Tool Company will offer to the trade a full line of the McKiernan pneumatic rock drills. The plant of the McKiernan Drill Company at Dover, N. J., is practically a new one, having been built in 1900. It is fully equipped with modern tools and places the Chicago company in a position to supply the immediate demand for rock drills. This new department will be run in connection with the air compressor department, under the management of W. P. Pressinger. It is the intention of the company to establish agencies in all parts of the world for the sale of rock drills, and the management is looking for desirable agencies as well as for experienced rock drill salesmen. In this country a chain of agencies will be established from the Atlantic to the Pacific Ocean.

Since the beginning of the year the company has greatly increased its capacity in the United States and Canada by the purchase of additional plants, and still further enlargements are projected. In February it absorbed the Philadelphia Pneumatic Tool Company, Philadelphia, Pa., and later the Chicago Storage Battery Company, Chicago, Ill. Last month the company purchased the Canadian Pneumatic Tool Company, Montreal, Canada. These acquisitions provide for the increased demand for pneumatic tools, but do not materially increase the facilities for the manufacture of air compressors. Arrangements are being made, however, to take care of this branch of the business, and plans will shortly be completed for doubling the capacity of its compressor works at Franklin, Pa.

The Norfolk & Western Railroad has placed an order with the Chicago Pneumatic Tool Company for a 1200-foot cross compound air compressor for its new shops at Roanoke, Va., and the Japanese Government, which has lately been buying considerable machinery in this country, has placed an order for three large Chicago air compressors and three receivers.

Railroad and Other Machinery Requirements.

The Erie Railroad has sent out specifications for additional equipment for its various shops, covering power machinery particularly. The inquiries were sent through Westinghouse, Church, Kerr & Co., New York, from which it is inferred that the engineering concern is to have charge of the power equipment of the new shops which the Erie Railroad is constructing. In this connection it will be of interest to state that the purchases of machine tools by the Erie Railroad some few weeks ago amounted to a little over \$200,000, the greater portion of which were secured by the Niles-Bement-Pond Company, Manning, Maxwell & Moore and Prentiss Tool & Supply Company.

The Coal & Coke Railroad, Elkins, W. Va., has purchased about \$10,000 worth of machinery for its new shops.

The superiority of American machinery was demonstrated last week during the stay in this city of Dr. Francisco de Monlevade, general superintendent of motive power of the Paulista Railroad, of Brazil, South America, whose headquarters are in Rio de Janeiro. While visiting the various machinery houses in this city Dr. Monlevade was so impressed with some of our products that he cabled to the home

office and received permission to place orders in this country for considerable machinery for the company's shops at Sao Paulo. Of the orders placed the Chicago Pneumatic Tool Company, New York, received a good portion, including a 1000-foot cross compound air compressor and 60 pneumatic tools. Dr. Monlevade is at present in Cleveland, Ohio, and expects to sail for Brazil next week.

So far as either purchases or inquiries for tools and machinery are concerned, the Pennsylvania Railroad has had a week of typical midsummer dullness. The purchasing department has issued absolutely nothing to the tool trade and this condition will likely prevail until the vacation season is over. Rumors, but rumors only, have been busy with the contemplated erection of a large car shop at Pottstown and an ice plant at Petersburg, Pa. These have no foundation in fact, however, at this time.

The metal machinery manufacture of George A. Ohl & Co., at 159 Oraton street, Newark, N. J., which has grown rapidly within the last few years, will be doubled in size during the present summer, to meet the increased demands made for the Ohl machinery products, which consist of a varied assortment of metal working machinery from the heaviest type down. The addition will consist of a new main shop two stories in height, of brick construction, 62 x 265 feet, while the front of the addition will be three stories in height and 40 x 62 feet, forming with a building of similar height just completed a T-shaped plant, which with the old structure is twice the size of the dimensions given exclusive of the pattern shop, which is in a separate building. The boiler room and forge shop will be 30 x 43 feet, and the engine room, 26 x 30 feet. The new building will be connected with the old shop by an arch, and a spur from the Erie Railroad will run through the structure. The company owns the property bounded by Erie place, Elwood avenue, Seabury street and the Erie Railroad, and the pattern making shop is being moved adjacent to the railroad tracks. A 125 horse-power boiler has been purchased from Hewes & Philips of Newark, as well as a 100 horse-power Corliss engine and a 30-kw. Crocker-Wheeler generator. A 10-ton Cleveland crane with a 40-foot span will be erected in the new shop and the Ohl Company is in the market for a boring mill, lathes, knife hardening furnace for handling work 12 feet long and other smaller machinery, a list of which has not been made up. It is expected that the addition will be completed within three months and shortly afterward will be in operation. The company will build some special machinery of designs made by its engineers for handling special work. The company makes 43 different kinds of sheet metal working machines, some of which are capable of handling work $\frac{1}{4}$ inch thick. The concern has been remarkably successful in recent years and is growing rapidly.

A full boiler plant equipment will shortly be purchased by the Odlum-Taylor Boiler Company, Memphis, Tenn., which is now in the market for hydraulic and pneumatic machines, Corliss engine direct connected to generator, electric traveling crane and a number of small tools and independent motors for operating the tools. The company is also in the market for 100 to 150 tons of structural iron work for its new building and will be pleased to receive catalogues from manufacturers of all kinds of equipment used in the construction of a boiler shop. R. A. Odlum is president.

Quite a little new machinery will soon be purchased by D. T. Sutherland, machinist and founder, Bainbridge, Ga., for equipping his new plant. Work has been started on the foundations of the new buildings, which will include a machine shop 50 x 150 feet; pattern shop, 25 x 50 feet; boiler and engine room, 40 x 50 feet, all constructed of iron and brick. An overhead traveling crane will be installed in the machine shop and a new engine, boiler, boiler feed pump, heater and several machine tools will be purchased. As soon as Mr. Sutherland gets settled in his new quarters work will be started on the construction of a foundry 50 x 75 feet. Building material has been purchased, but no orders have been placed for the mechanical equipment.

New machinery, including lathes, milling machines, shapers, bolt cutters, &c., are to be added to its plant by the Fulton Machine & Vise Company, Lowville, N. Y., which was recently incorporated and which has taken up an established business. The company will manufacture Fulton patent vises, solid jaw parallel vises, centrifugal and pressure pumps, slab and edger barkers, pulp and paper machinery, &c. The officers and directors are: U. Lansing Waters, president; John E. Haberer, vice-president; E. W. Fulton, secretary and treasurer; T. S. Dibble, superintendent; Mason N. Swan, Lafayette Wetmore, James Nefsey.

Machinery men are watching with considerable interest the developments in connection with the construction of the new Manhattan Bridge and they are especially interested in the result of the awarding of the contract. If the work is given to any company other than those which have been constructing large bridges about New York of late a large amount of new machinery will be needed, and in any event considerable buying will be done in the way of new riveting machinery and pneumatic tools such as are used in large bridge construction work. All of the machinery used on

the structure will have to be passed upon by the engineers in charge, and it is not likely that any machine tools that show signs of wear will be put into service, as it is stated in the specification that nothing but machinery in the best working order can be used on the structure. The work will be awarded on August 10 and the trade will follow the fortunate bidder closely for some time to come.

The New York Edison Company has ordered from the Westinghouse Machine Company three steam turbine generators of an aggregate capacity of 48,000 horse-power for the extension of its lighting plant system. It is understood that two of the generators will go to the Williamsburg plant and the other may be for the Waterside plant. The company has ordered some of the machinery which was bought a year ago for the Waterside extension to be delivered within the next month, and before the summer is over the plant will be entirely equipped. Notwithstanding the fact that it is announced that all the machinery has been bought for the extension, it is probable that there will be some purchases made before long by the Edison Company, as there will in all probability be some smaller things in the way of machinery that have been overlooked. It is proposed to enlarge the Waterside station as the occasion demands, as the company intends to eventually generate the majority of its power there. Consequently the trade will probably be favored with inquiries from that source from time to time.

The Department of Water Supply, Gas and Electricity, New York, will receive bids until August 9 for the erection of a new Gravesend pumping station on Avenue S, between East Sixteenth and East Seventeenth streets, Brooklyn, N. Y.

Business Changes.

Abendroth & Root Mfg. Company, Newburg, N. Y., manufacturer of water tube boilers and spiral riveted pipe, has opened an office in the House Building, Pittsburgh, in charge of C. S. Johnson. This office reports an order for spiral pipe for shipment to Mexico amounting to \$150,000.

New England Machinery Market.

WORCESTER, MASS., July 25, 1905.

The past week has served to accentuate the improved conditions of business among the machinery manufacturers, which came quite unexpectedly and almost unprecedentedly in the midst of the hot weather when a lull was looked for instead of a materially increased volume of orders. At first the new condition was looked upon as probably transitory, resulting from a coincidence of orders arriving in bunches instead of being spread over several weeks. But the contrary has proved to be true, and the expectation is that the summer will see no diminution from the present prosperous condition, and that the autumn will see things actually booming.

The boiler makers have had an even greater surprise than the machine tool people. Since the first of July orders have actually poured in, this being so in every shop in New England, so far as can be learned. All are rushed to full capacity at a season which is usually quite dull. The autumn months always see the boiler shops busy in preparation for the cold months, and the owners are wondering what will happen when this other class of business comes in. It looks as if deliveries would be pretty slow later on. The boiler makers attribute the unusual conditions to the greatly increased vigilance of boiler inspectors, which is a direct result of the terrible boiler explosion at Brockton some months ago. Boilers that quite recently have been passed as safe are being condemned in large numbers in manufacturing establishments and in larger numbers in steam heating plants where high pressure is employed. Boilers which would have been considered safe enough had the Brockton disaster not set a higher standard of safety have been condemned in the zeal which always follows any great disaster where many persons perish. The boiler manufacturers are reaping the benefit of this zeal. Two months ago they were complaining and with good cause that business was not only dull but that there seemed no hope of marked improvement.

Among the machine tool manufacturers the scarcity of skilled labor, already mentioned in this column, has assumed really serious proportions. It is almost impossible to get a good man without "stealing" him from some other shop, to use the trade term for the hiring away of another's help. Manufacturers are sending out to other places to try to pick up good men, but their representatives usually depart disappointed. The labor bureaus are besieged with requests from other places which have to be declined. Too few apprentices have been trained and the anticipated result has come, a skilled labor famine at the beginning of a time of unusual prosperity. The secretaries of the labor bureaus are watching with anxious eyes for signs of the hiring away of workmen by one subscriber of a bureau from another. As subscribers are supposed to register the names of all new employees, together with their places of previous employment, and also the names of all workmen who leave their employment, the labor bureau has a pretty good line on transfers which savor of "stealing." Consequently where this offense

occurs the labor bureau is made miserable by the complaints of the subscriber whose men have departed.

The Shaw Machine Company, Lowell, Mass., which will manufacture worsted machinery, as stated in *The Iron Age* of last week, will be established on an ambitious scale. The machine shop will be a one-story building, 70 x 500 feet, and the foundry, also one story, will be 100 x 200 feet. The company wishes it stated that while a considerable amount of the machine equipment has been ordered, it is still in the market for machine tools. Catalogues of manufacturers of materials and equipment needed in foundry and machine shop as well as power equipment will be appreciated. It is planned that electric power will be installed, but it is not determined whether direct drive or drive by units will be employed. The company has purchased 10 acres of land near Middlesex Village, in Lowell, at Middlesex and Edwards streets, with a long frontage on the tracks of the Boston & Maine Railroad. The company will specialize in worsted machinery, but other textile machinery will be built. The full list of officers follows: President and manager, Frederick P. Shaw; treasurer, John C. Burke; assistant treasurer and secretary, Ralph O. Ingram; directors, these officers and Charles L. Hildreth and William A. Lee, Jr. Mr. Shaw was until recently paymaster and assistant superintendent of the Lowell Machine Shops and played an important part in the designing of worsted machinery. Mr. Ingram was in charge of the cost department of the Lowell Machine Shops. Mr. Hildreth was superintendent of the same shops. Mr. Lee is superintendent of the J. T. Perkins Company, worsted and camel hair manufacturer, Brooklyn, N. Y. Among the stockholders are representatives of other large textile manufacturing establishments. The company expects to employ 5600 hands. The new company will be in direct competition with the consolidated companies which have recently come together under a common ownership, including the Lowell Machine Shops and the Kitson Machine Company, both of Lowell, and the Saco & Pette Machine Shops, Newton Upper Falls, Mass.

The International Machine & Screw Company has been organized at Springfield, Mass., to manufacture machine screws by means of a new machine, the invention of George T. Warwick of that city. The authorized capital stock of the company is \$500,000. It is expected that the factory will be located at Springfield. The company states that its affairs are not far enough advanced to enable it to state what machine equipment will be required, but as it is intended that the company will build its own machines it will be necessary to expend \$50,000 in modern machinery. The incorporators are T. W. Leete, George T. Warwick, D. O. Gilmore, Henry E. Marsh and Sherman D. Porter. The temporary office of the company is with the Springfield Board of Trade.

The New Bedford Gas Engine Company, New Bedford, Mass., has been incorporated in Massachusetts with a capital stock of \$20,000, to take over the business of the New Bedford Textile Machine Company. The company has largely increased its facilities for manufacturing the T. & W. gasoline engines. It will soon be in the market for modern machine tools and other equipment. The officers of the company are: President, J. N. Gifford, Fairhaven, Mass.; treasurer and clerk, F. J. Whipple, New Bedford; directors, these officers and F. A. Gardner. The New Bedford Textile Machine Company manufactured gasoline engines and dealt in engine supplies and new and second-hand engines.

The Worcester Polytechnic Institute, Worcester, Mass., has prepared plans for a material increase in its power plant consisting of a 175 horse-power Westinghouse engine and generator, two other generating sets in the future and two 200 horse-power Stewart boilers. The present power plant, which was installed some years ago, was intended primarily for instruction in steam and electrical engineering and to care for a small power service load. The power requirements have gradually increased, largely because of the increase in the Washburn shops of the institute, until the load is greater than can be economically handled. The new plans provide for the probable growth of the Polytechnic in the near future. The full scope of the plan includes the two existing 80 horse-power boilers and the two 200 horse-power boilers already mentioned, the contract for one of which has already been placed. The other of the larger boilers will be installed when the demand shall require it. A contract has been placed with the Westinghouse Electric & Mfg. Company for a 175 horse-power 13 x 22 x 13 inch compound engine, capable of developing 250 horse-power under an overload and a two-phase 60-cycle revolving field alternating current generator. This equipment will be installed this summer. It is expected that during the college year a smaller direct connected unit of 60 to 70 horse-power will be installed, and at a later date a larger unit of 250 horse-power, making a total engine and generator equipment of 485 rated horse-power with a maximum of 700 horse-power. This will provide not only for power, but also for the instruction of students in the several branches of engineering.

The city of Holyoke, Mass., is contemplating the establishment of a large pumping plant in connection with its water system. The improvements as proposed would entail

the expenditure of \$225,000. The matter is now before the city government.

It is proposed to increase the power at Windsor Locks, Conn., by the establishment of additional locks on the canal, which provides water power to a number of important manufacturing establishments. The canal taps the Connecticut River some distance above Windsor Locks, so that there is a considerable head of water at that point. The attempt is being made to procure the opening of the Connecticut River to navigation as far as Springfield, which would give that city water rates on coal and other heavy freights, and the project to provide additional locks at Windsor Locks is a part of a compromise between conflicting interests along the river.

The Bodwell Power Company, Bangor, Maine, has begun the development of large water power, which has been noted in this column. About \$1,000,000 will be expended in all. The first step is the building of a concrete dam and power house at Milford, Maine, and bids have already been received for this part of the work, which will occupy about a year.

James F. Barr has resigned as treasurer of the Carlyle Johnson Machine Company, Hartford, Conn., and Scott H. Simon has been elected treasurer and general manager of the company. Mr. Simon was formerly a resident of Youngstown, Ohio, and for the past fifteen months has been with the Carlyle Johnson Company. The company manufactures friction clutches and marine reverse gears.

Chicago Machinery Market.

CHICAGO, ILL., July 25, 1905.

Machinery business is encountering its reasonable delays due to the absence from business of so many buying interests. The general tone of the machinery market, however, notwithstanding this is the midst of the vacation period, is such as to encourage both manufacturers and sellers of machinery and machine tools to the belief that the fall trade will be unusually large. Just now it appears that the demand for prime movers, including engines, boilers, generators, motors, gas engines, air compressors and the like is quite a little in excess of the ordinary demand at this time of year. Demand for machine tools keeps up well, everything considered, though the trade is naturally of a miscellaneous, pick up character, the machinery dealers getting a comfortable business for shipment from their floors. The metal working machine and tool interests have thus far failed to realize as large a business as was expected from the extremely heavy output of finished iron and steel and the record breaking production and consumption of pig iron which has been a factor in the industrial world for the last few months; but there are indications on every hand that machinery equipments connected with the metal trades are running low and that the buying for the coming season will be very satisfactory.

Among the larger buyers represented in the market in the last week or two are the International Harvester Company, which is evidently doing a good deal of repair and equipment work in its shops during the summer shutdown; the Indiana Harbor Railway, which has already bought several miscellaneous lots, but whose large list is not yet published, and the Duluth, Missabe & Northern, a road belonging to the United States Steel Corporation, which is about to equip a new shop just outside of Duluth. In addition to these considerable business is expected shortly from the Morden Frog & Crossing Works, which is to equip a large new plant at Chicago Heights; the Indiana Southern Railway, which will have shops to build and equip along its right of way, and a number of other interests which have not yet advanced sufficiently to warrant specific mention, including a blast furnace for Pickands, Brown & Co. and a steel works to be built in the Chicago district by some interest not yet announced.

The trade is watching with natural interest the development of the black rust scare in the spring wheat region of the Northwest, as a failure of the spring wheat crop would result in a serious set back to a great many plants that would otherwise develop.

The Illinois Central Railway Company is expending about \$200,000 in the erection of new buildings at Burnside. These include a boiler shop, 120 x 552 feet; 90-foot roundhouse with 23 stalls; addition to passenger repair shop, 100 x 160 feet, and a transfer table pit, 50 x 540 feet. Equipment for these buildings was included in the large list of tools and machines recently bought by the railroad.

The Harrison Dust Guard Company, Toledo, Ohio, is having plans prepared for a \$20,000 plant which it is contemplating building this fall. If the plant is built a complete equipment of wood working machinery will be required.

Oshkosh, Wis., is to have an important addition to its industrial institutions within the next 60 days as the result of the incorporation of the Wilkin-Challoner Company with a capital stock of \$100,000. The organizers of the company are Theodore S. Wilkin of Milwaukee, well known as the inventor and manufacturer of various lines of saw mill machinery; John Challoner of Oshkosh, formerly owner of the

Challoner Mfg. Company of that city, and Charles W. Radford, also of Oshkosh, who is at the head of one of the large sash and door manufacturing concerns of that city. The purposes of the corporation are the manufacture and sale of all kinds of saw mill machinery, tools and implements and the buying, selling and manufacture of materials used in the manufacture of saw mill machinery. The main offices and the plant are to be located at Oshkosh, and plans are already well under way for the erection of a large plant on a tract of land reached by the three railroads centering in that city. Orders have been placed with the Niles-Bement-Pond Company for all the machinery and an electric crane of 40-foot span and 25-foot hoist ordered from Pawling & Harnischfeger of Milwaukee. The company intends to erect a foundry building as soon as the main building is completed. The machinery, tools and implements to be manufactured are not new to the trade, as they are all standard and have demonstrated their value by years of successful usage in saw mills and other institutions of like character. A large number of orders are already on file, to be completed as soon as the plant is in readiness for operation. One of the lines to be manufactured is that known as Wilkin's saw mill nigger. The officers of the company are: President, Chas. W. Radford; vice-president and general manager, Theo. S. Wilkin; secretary and treasurer, John Challoner.

The F. W. Niebling Company, Cincinnati, Ohio, is a new company organized with a capital stock of \$50,000 to manufacture ice machines. A new plant will be erected at Norwood, Ohio, a suburb of Cincinnati. Interested in the enterprise are F. W. Niebling, Louis Reemelin, John H. Martin, Fred Bertram and R. A. Powell.

John Duncan, architect, Unity Building, Chicago, is preparing plans for a large manufacturing establishment on West Washington street, near Halsted, for parties from out of town whose names for the present are not divulged. The plant will involve an expenditure of about \$185,000.

The N. K. Fairbank Company, Chicago, is adding a small refinery to its plant at Wentworth avenue and Twentieth street. Power will be supplied from the main factory. Equipment will call for several motors and special machinery and tanks required in the manufacture of soap, lard, cottolene and other by-products. J. C. Llewellyn, First National Bank Building, is the architect.

The San Marcos Valley Interurban Railway Company, A. T. Fischer, 'Frisco Building, St. Louis, Mo., president, will build an electric road 24 miles in length from San Marcos to Luling, Texas. A large power plant will be installed, including considerable equipment. Surveys have been made, rights of way and terminal facilities obtained and bids for construction are now being prepared. Contracts will probably be let early in August.

The Republic Iron & Steel Company, Chicago, has purchased from John S. Gregory, Western manager of the McNeill Boiler Company, four 250 horse-power Cook vertical water tube boilers. Two of these boilers are for the East Chicago plant and two for the Tudor works at East St. Louis.

Philadelphia Machinery Market.

PHILADELPHIA, July 25, 1905.

There has been but little change in the local machinery market during the past week. The usual summer inactivity continues and new business appears to be rather scarce. Machinery merchants generally report a quiet week, while dealers in second-hand machinery say that the market is if anything a shade duller than the previous week. While the present condition of inactivity is more or less customary at this season and frequently continues along until about September it is believed from the number and the nature of inquiries being received that trade conditions will show improvement early in August. The raw and finished material markets are stronger, the crop situation good and other conditions indicative of business activity are in evidence. While merchants do not find the immediate demand very active manufacturers continue fairly busy on work already in hand. Some, such as locomotive builders and manufacturers of heavy machine tools, engines, &c., have sufficient work on their books to keep them continuously active throughout the remainder of the year. Here and there tool builders find it hard to make deliveries promptly, but a large proportion of the trade could conveniently handle a greater volume of business. Inquiries in a number of instances have increased considerably; the railroads have been asking for estimates on a large number of tools and appliances and are in fact the principal buyers in the market at this time. Most of the actual business transacted during the past few weeks, however, has been made up of small sales of day to day character and composed chiefly of orders for the medium and larger sized tools.

Foreign demand is unchanged; conditions abroad apparently are not favorable for the importation of American products of machinery builders at present prices.

In the foundry trades the situation is unchanged. There is sharp competition for the better class of work, particularly

in gray iron castings, as nearly all the foundries could take on a heavier tonnage. Steel castings are still in active demand and casting plants are pushed in many cases to get work out on specified time.

H. B. Underwood & Co. continue fairly active. There has been a good demand for their various tools, particularly from the different railroad companies in the Middle West. Foreign demand, however, is somewhat weak. A number of special portable tools have recently been shipped by them to the Illinois Central Railroad Company, while portable cylinder boring machines, valve seat facing machines and crank pin turning machines have been shipped to a number of Western and Southern roads.

Hilles & Jones Company, Wilmington, Del., advises us that there is a good indication for future business in the amount of inquiries which it is receiving for tools, while orders in hand are sufficient to keep its plant fully occupied for some time to come. In the foundry department the company notes a considerable improvement in the volume of business and the various other departments of its plant all continue busy.

Manning, Maxwell & Moore through their local office have received the contract for the greater part of the machine tool equipment of the North East Manual Training School of the City of Philadelphia. This includes, among other tools, 14 lathes, 14, 12 and 10 inch swing; drills, grinders, shapers, tin workers' tools, vises and general equipment. Inquiries, while not as plentiful as they were early in the month, continue good, and although there is a slight lull in immediate demand some good sales of various heavy tools have been made to various railroads and industrial plants.

The Betts Machine Company, Wilmington, Del., is running its plant on full time and with a full complement of men. Considerable work is on hand and inquiries are so numerous that it feels assured of a good volume of business throughout the year. Among recent orders received by it is one for 12 heavy tire boring and turning mills for the Standard Steel Works, Burnham, Pa., making 21 of these mills that have been furnished this concern during the last 60 days and 57 Betts mills that the Standard Steel Works has now in use. Recent deliveries made by the Betts Company include various tools to the different shops of the Southern Pacific Railroad Company; Philadelphia & Reading shops at Reading, Pa.; Chicago, Cincinnati & Louisville Railroad at Peru, Ind.; Lehigh Valley Railroad and the "Soo" line. A 16-foot boring mill has also been furnished the Tamaqua Mfg. Company, Tamaqua, Pa.

The Espen-Lucas Machine Works is very busy; inquiries for cold saw cutting off machines and other tools have largely increased and a number of good orders have been taken. There has been a particular demand for I-beam saws, six of one size of these machines being included in one recent order. Orders for floor boring, milling and drilling machines and for grinders are also to be noted. Recent deliveries by the Espen-Lucas Works include two grinders and a crank shaft machine for parties in the New England States; several I-beam, foundry and bar saws for nearby parties; a horizontal floor boring machine for parties in the northern part of the State, and a number of cold saw cutting off machines for parties in the Middle West.

The Baldwin Locomotive Works have enough business on their books to keep their plants running at full capacity during the remainder of the year. While the immediate demand is light there is a fair amount of business from railroads and from industrial plants. These parties have under contemplation an addition to their brass foundry, but at present no definite plans have been made.

The E. H. Mumford Company notes a considerable increase in the demand for molding machines, particularly in the stove trade, where there is stronger inclination than ever to introduce molding machinery in the foundry. During the past few weeks orders have been taken for a number of plain power rammers, hand ramming split pattern, power ramming split pattern, vibrator frame and jar ramming machines.

The Energy Elevator Company is particularly busy for this season of the year. There is a good demand for all classes of elevators, both from local and from out of the city, parties. Two additional hand power freight lifts will be installed by this company in Bryn Mawr College, Bryn Mawr, Pa., and it has the contract to overhaul and re-equip all the lifts in the Continental Hotel in this city. Deliveries of elevators of various kinds have recently been made to parties in Tampa, Fla.; Fairmount, W. Va.; Hazleton, Pa.; Morgan City, La.; Pittsburgh, Pa., and New Britain.

The Pennsylvania Steel Company will begin work at once on 120 coke ovens of the Semet-Solvay type, to be located at its Steelton, Pa., works. These ovens and the purchase of additional land adjoining its Steelton properties were provided for in the recent issue of \$1,500,000 of the company's bonds.

American Boiler Manufacturers' Association

TORONTO, ONT. July 25.—(*Special Telegram*).—The seventeenth annual convention of the American Boiler Manufacturers' Association began its sessions to-day at King Edward Hotel, this city, with a large attendance of active and associate members. The meeting was called to order by Secretary J. D. Farasey of the H. E. Teachout Boiler Works, Cleveland, Ohio, and those who took part in the opening speechmaking were introduced by the President, Robert Munroe, Jr., of Pittsburgh, Pa. The addresses of welcome were by Acting Mayor John Shaw and John H. Main of the Canadian Heine Safety Boiler Company. The response for the association was by William H. S. Bateman of the Lukens Iron & Steel Company, Philadelphia, Pa.

Resolutions in memory of two deceased presidents, John O'Brien and John Rohan of St. Louis, were adopted by a rising vote.

It was decided that the convention of 1906 be held in Pittsburgh, Pa.

The following topics were discussed at to-day's session:

Proper Sizes of Blow Offs.
Proper Ratio of Grate Area to Heating Surface. Taking Into Consideration the Character of Fuel, Intensity of Draft, &c.
Causes of Boiler Explosions Due to Incompetent Engineers and Neglect of Proper Inspection.
The Work of the A. B. M. A. in Relation to Codifying and Simplifying Inspection Laws.

The recommendations of other societies favoring the continuance of the experiments conducted by the United States Geological Survey in the testing of steam coals and in other similar directions were approved.

Col. E. D. Meier, chairman of the Committee on Uniform Marine Inspection Laws, will report to-morrow the progress made during the past year on the plan of revising the steamboat inspection laws by a commission of experts which shall represent all interests involved—vessel and engine builders, boiler manufacturers, &c., so as to formulate a scheme embodying the best modern practice. The boiler manufacturers favor the appointment of a competent commission with a sufficient appropriation for carrying on a thorough inquiry, so that all interests may be heard and fair criticism had before any revision of the present laws is attempted. The American Steel Manufacturers' Association and the American Society for Testing Materials were reported to be in hearty accord with the American Boiler Manufacturers' Association's views. This association will approve of a commission to be appointed by the President to complete the inquiry and draft suitable legislation to be presented to Congress.

The entertainment features of the convention are an unqualified success. The local committee consists of J. J. Main, Jos. Wright, W. P. Bull, Wm. J. Guy, Wm. Inglis and T. H. Hamilton, assisted by associate members of the organization, represented by W. O. Duntley, J. Corbett, H. B. Hare and W. H. S. Bateman. A lake ride by moonlight on the steamer Chipewa occurred Tuesday night. On Thursday morning there is a lake excursion, with lunch at the Queen's Royal, and the annual banquet comes on Thursday night. The general Committee on Entertainment consists of John J. Main, J. T. Corbett, Wm. H. S. Bateman, H. B. Hare, E. Downey, W. L. Huch, Victor A. Moore, Charles K. Barnes, J. W. Tierney, J. M. Chamberlain, Richard H. Bate, Edward D. Meier, L. Fred. Nagle, Henry Chisholm, W. O. Duntley, Thos. Aldcorn, John McAdams, James J. Bonner and Frederick R. Tease.

A New Ore Record at Conneaut Dock.—A new unloading record was made at Conneaut, Ohio, last week by the steamer George W. Perkins which unloaded a cargo of 10,514 tons of iron ore in 4 hours and 10 minutes, the time being measured from the starting of the first machine to the stopping of the last machine. Four Hulett clamshells and four Brown electrical machines were employed in the unloading. All of the ore was loaded directly into cars. This last record is compared with 9945 tons unloaded by the steamer Augustus B. Wolvin in July, 1904, at the same dock, the same equipment being employed. In the case of the Wolvin the average

operating time for the eight machines was 4 hours and 6 minutes, but the time between the starting of the first machine and the stopping of the last machine was 4 hours and 30 minutes. Instead of all the ore being placed in cars, about half of that taken from the Wolvin was unloaded on the dock. In clearing up 50 men worked in the hold of the Wolvin and 32 in the hold of the Perkins.

Trade Publications.

Vanadium Steel.—The Vanadium Alloys Company, 25 Broad street, New York City, in a recent pamphlet recapitulates the results of tests upon several varieties of vanadium steel. Minerals containing vanadium are found in Spain, Mexico, Sweden and Scotland, and as the metal has become of more commercial importance its presence in a larger number of minerals and in various new localities is likely to be demonstrated. The pamphlet cites a considerable number of instances in which the tensile strength of carbon steel has been raised by the addition of a small percentage of vanadium. It is stated that the use of vanadium steel for draw pins on cold draw benches has increased the output of work by 25 per cent., in addition to the gain that has resulted by the continued use of these pins without breaking, so that no stoppage of plant has been necessary. Where machinery parts are subject to severe shock, rapid alternation of stress or other high strains, the vanadium steel has produced good results. Where work has to withstand a high but not excessive static strain, high impact, a large number of alternations of stress and great torsional strain, a chrome vanadium steel is recommended. This particular steel has an ultimate stress of 36 tons per square inch, a yield point of 23 tons per square inch, an elongation of 30 per cent., and a torsion result under standard conditions of over 49 twists before rupture. An instance is cited of a special hydraulic press fitted with improved tie bolts 20 feet long by 3½ inches in diameter which repeatedly failed in work through fracture of the bolts, though these were made of the best steel obtainable. Owing to peculiarities in the design the diameter of the bolts could not be increased, and the use of the press would have been abandoned but that the difficulty was overcome by providing bolts of vanadium steel.

Nickel Steel.—The International Nickel Company, 43 Exchange place, New York, has issued a booklet enumerating the purposes for which nickel steels containing 3 to 45 per cent. nickel have been successfully applied in the United States, France, Germany and England. It is stated that the addition of 3 to 4 per cent. of nickel to steel increases the proportion of elastic limit, adds to the ductility of the steel and increases toughness, resistance to compression, resistance to abrasion and resistance to shock. The various products into which nickel steel has entered in recent years are listed alphabetically, beginning with air reservoirs and ending with Z-bars. The total is 251.

Electrical Machinery.—National Electric Company, Milwaukee, Wis. Two cards. One shows a view of the erecting shop of the company, with National generators and Lundell universal motors under construction. Another card concerns Christensen air brake equipments and shows a compressor and a suburban coach of the Cleveland, Elyria & Western Railway equipped with Christensen air brakes.

Boring Mill.—Colburn Machine Tool Company, Franklin, Pa. Bulletin No. 21. Contains view and specifications of a 30-inch vertical boring and turning mill. This tool was described in *The Iron Age* April 27, 1905.

A Charcoal Blast Furnace Record.—The No. 1 blast furnace of the Algoma Steel Company, Sault Ste. Marie, Ont., has established a new world's record for a charcoal blast furnace. The output on July 8, 1905, was 173 tons, on July 9 it was 172 tons. The average for the four days ending July 9 was 163 tons. The charcoal consumption per ton of pig iron was 1741 pounds; the pressure of the blast 9¼ pounds; the amount of blast 10,172 cubic feet per minute. As yet the furnace has not been blown to its capacity on account of lack of charcoal, but judging from its behavior so far the management sees no reason why the furnace cannot make as much iron with charcoal as it could with coke as a fuel.

It is announced by the Toronto & Niagara Power Company that its transmission lines are to be extended westward from Niagara Falls, Ont., as far as London, via Brantford, Paris, Woodstock, Ingersoll and other intervening points, with branch lines to Galt, Berlin, Preston, Hespeler, Guelph and Waterloo. The transmission line between Niagara Falls and Toronto is nearing completion. The Toronto & Niagara Power Company is allied to the Electrical Development Company of Ontario, Limited, which has about completed its tailrace, wheel pit and inlets or head works necessary to the development of 125,000 horse-power. The installation for the first half of this amount of power will shortly begin.

Iron and Industrial Stocks

NEW YORK, July 26, 1905.

Fluctuations in the iron and steel stocks have been within very narrow limits in the past week. On Saturday, July 22, all stocks on the New York Stock Exchange were weak, because of disconcerting reports from the wheat fields of the Northwest, and there were declines of 1 to 2 points. The steel stocks generally showed a decline of 1 point or a fraction more. This was recovered for the most part on Monday. On Friday, July 21, Republic Iron & Steel preferred and Tennessee were more active than for several days, the former touching 83½ and the latter 87¾. The low price on United States Steel common for the week was 32¾ and the high price 35; on Steel preferred the low price was 100¾ and the high price 103. Last transactions up to 1.30 p.m. to-day were made at the following prices: Can, common 11¼, preferred 68; Car & Foundry, common 35, preferred 98¾; Locomotive, common 47¾, preferred 111; Steel Foundries, common 7¾, preferred 36¼; Colorado Fuel, 44¾; Pressed Steel, common 39, preferred 94½; Railway Spring, common 35, preferred 99; Republic, common 20½, preferred 82¾; Sloss-Sheffield, common 80, preferred 107; Tennessee Coal, 85¼; United States Steel, common 33¾, preferred 102¼, new 5's 94¾.

The report of the Page Woven Wire Fence Company for the six months ending June 30 showed an increase of \$50,320 in surplus. Notes payable were increased \$272,127, while accounts payable were reduced \$100,277, as compared with the six months ending June 30, 1904. The company has outstanding \$1,000,000 of preferred stock, \$5,000,000 of common stock and \$1,900,000 of 5 per cent. bonds. The surplus on June 30, 1905, was \$488,120; notes payable, \$574,127; accounts payable, \$99,398. On the same date accounts receivable were \$359,843, against \$479,617 on June 30, 1904; bills receivable, \$53,402, against \$44,270; merchandise, \$740,691, against \$530,544; plants, \$2,623,138, against \$2,545,190.

A block of 1000 shares of the stock of the old United States Shipbuilding Company was sold at auction last week for \$25, or 2½ cents per share. There were 500 shares of common and a like amount of preferred stock.

At the meeting of the directors of the American Steel Foundries, held in New York City last week, the proposal for the \$3,500,000 bond issue was approved and will be submitted for the action of the stockholders later. The proceeds of this bond issue will be applied in part to purchase obligations incurred in connection with the acquisition of the Simplex Railway Appliance Company in January last, also to take care of indebtedness incurred in extensive improvements at the plants of the company within the past year. It is understood that some changes in official personnel will be announced in the near future, the resignation of President Miller being one of these. In connection with the recent meeting of the directors it developed that President E. B. Thomas of the Lehigh Valley Railroad resigned some time ago as a director of the American Steel Foundries, and was succeeded by J. A. Middleton, first vice-president of the Lehigh Valley Railroad, who also takes Mr. Thomas' place on the Executive Committee. The change was due to President Thomas' inability to give time to the duties of the office.

Dividends.—National Steel & Wire Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable August 2.

Cambria Steel Company has declared the regular semi-annual dividend of 1½ per cent., payable August 15.

American Shipbuilding Company has declared a dividend of 4 per cent. on the common stock, payable in four quarterly installments, the first on September 1.

Amalgamated Copper Company has declared a quarterly dividend of 1¼ per cent., payable August 28.

United States Steel Corporation has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable August 30. Books close August 7 and reopen August 31.

Work has been going on for about thirty days on the connection between the Wabash Railroad and the Clairton plant of the Carnegie Steel Company. Work is also progressing on the connection between the Wabash and the Union Railroads, which reaches other Carnegie plants. These connections will be completed some time this fall and constitute the only links necessary to give the Wabash Railroad the expected Carnegie tonnage. Various reports in the past regarding friction between the Steel Corporation and the Gould interests growing out of the Western wire situation have been quite without foundation as touching the Wabash connection with the Carnegie works at Pittsburgh, which has been subject to delays on account of the difficulty in securing the necessary right of way. Evidence of friendly relations is that within the past week the Carnegie Steel Company

has sold the Gould system 30,000 tons of rails for various points on the system and recently sold 5000 to be used in the Pittsburgh district. This is significant at a time when rail orders are not easy to place.

New York.

NEW YORK, July 26, 1905.

Pig Iron.—Until the close of the last week the market was very active, since that time it has quieted down considerably. Among the larger transactions reported in this district are 7500 tons to two stove interests and 5500 tons to a railroad specialty manufacturing company, the branch on the lakes taking 2500 tons additional. There were also some good sales of Gray Forge to eastern Pennsylvania mills, one plant taking 5000 tons. With the exception of the foundry trade, the buyers all have bought for delivery during the next 60 and 90 days, but have not cleaned up the market, there being some Iron still available. Southern sellers are now asking \$11.75 to \$12 for No. 2 Foundry at Birmingham. We quote for Northern Irons, at tide-water, \$16.25 to \$16.75 for No. 1 Foundry, \$15.50 to \$16.25 for No. 2 Foundry, \$15 to \$15.25 for No. 2 Plain and \$14.50 to \$14.75 for Gray Forge. Southern Iron is selling on the basis of \$15.50 to \$16 for No. 2 Foundry, New York.

Steel Rails.—There has been a good deal of activity. Among the sales recently effected are from 25,000 to 30,000 tons for the Gould system, 17,000 for the Spokane International, 12,000 tons for the Kansas City Southern, 50,000 tons for the Somerset Railway, 4000 tons for the Buffalo & Susquehanna, 3500 tons for the Central Railroad of New Jersey and 6000 tons for the St. Louis & Southwestern. The market for Light Rails is firmer. We quote \$23 to \$25, according to section. Some large foreign orders are pending.

Cast Iron Pipe.—Midsummer quiet has come upon the Cast Iron Pipe trade in the East and no considerable activity is looked for until the fall. The recent advance in Pig Iron has given a somewhat firmer feeling to this market. We quote carload lots at \$27 per net ton for 6-inch Pipe at tidewater.

Finished Iron and Steel.—The giving out of the specification for the new Manhattan Bridge by the Department of Bridges of the City of New York is the chief event of note in the past week. The tonnage of Steel required for anchorages and superstructure is estimated at about 42,000 net tons. Bids will be opened on August 10. Acid Open Hearth Steel is specified throughout. Structural mills continue to get the lion's share of going business. One local contracting firm covered for upward of 15,000 tons of Shapes in the past week, a part of the Steel going into export work. The American Bridge Company has closed something over 10,000 tons in the week, representing a variety of work with no large contracts included. There is every indication that the July total of this company will come up well to the average of 70,000 tons a month, which has been attained in the last few months. The Plate situation shows no material change. All the mills are comfortably employed and are able on some gauges to give reasonably prompt delivery. Inquiries for export continue to come up, a moderate tonnage being represented. With prices unchanged and no prospect of early changes there is no anxiety to cover. The jobbing trade has taken hold to some extent in Bars, Bands, Hoops and other light products, but there are no heavy contracts as yet. We make quotations as follows at tidewater: Beams, Channels, Angles and Zees, 1.74½c. to 1.84½c.; Tees, 1.79½c. to 1.89½c.; Bulbs, Angles and Deck Beams, 1.84½c. to 1.94½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine, 1.94½c. to 2.04½c.; Fire Box, 1.94½c. to 2.50c., according to specifications; Refined Bar Iron, 1.59½c. to 1.64½c.; Soft Steel Bars, 1.64½c.

Old Material.—On Scrap for rolling mills and Steel works there is a difference of about \$1 a ton between buyers and sellers. Consumers have such large stocks in many cases that they cannot be interested except at special offers. The tone of the market for Foundry Scrap is firmer, in line with the situation in Pig Iron and there are more inquiries, with actual transactions growing more frequent. A number of sales of Stove Plate, Machinery Cast Scrap and Old Car Wheels are reported for the week. Quotations for New York and vicinity, gross tons, are about as follows:

Old Iron Rails.....	\$15.50 to \$16.50
Old Steel Rails, rolling lengths.....	13.25 to 14.25
Old Steel Rails, short pieces.....	13.00 to 14.00
Relaying Rails.....	19.50 to 20.50
Old Car Wheels.....	15.50 to 16.50
Old Iron Car Axles.....	18.00 to 19.00
Old Steel Car Axles.....	16.00 to 17.00
Heavy Melting Steel Scrap.....	13.25 to 14.25
No. 1 Railroad Wrought Scrap.....	14.50 to 15.50
No. 1 Yard Wrought Scrap.....	13.00 to 14.00
Iron Track Scrap.....	12.50 to 13.50
Wrought Pipe.....	11.00 to 12.00
Ordinary Light Iron.....	7.50 to 8.50
Cast Borings.....	6.50 to 7.50
Wrought Turnings.....	10.00 to 11.00
No. 1 Machinery Cast.....	13.75 to 14.75
Stove Plate.....	10.00 to 11.00

Molders' Wage Situation in the Pittsburgh District.

A meeting of local unions Nos. 46, 243, 270 and 443 of the Iron Molders' Union of North America was held in Pittsburgh Monday night, at which Joseph F. Valentine, president of the National Union, was present, and instructions were given to present a scale for signature to the 68 foundries in the Pittsburgh district, the results of which request will be heard at a meeting to be held Thursday night.

The situation grows out of the fact that in May, prior to the expiration of the old wage scale on May 31, a voluntary advance of about 10 per cent. in wages was made by all but one of the 26 members of the Manufacturers' Association, the one exception being a company which gave advances satisfactory on an average, but not bringing wages up to the minimum observed by the others. This forestalled concerted action by the molders' union. In view of the fact that the manufacturers granting the advance did not bind themselves to continue the new wages for a year, and the further fact that the action was taken by the Manufacturers' Association only and not by the 42 foundries in the Pittsburgh district outside the association, the men desire the scale to be signed in the regular way.

About a year ago a cut of 10 per cent. was made in wages of molders and core makers. The voluntary advance last May about restored the old wages, making the minimum \$3.30 per day.

The arrangement now proposed by the men as a result of Monday night's meeting puts the open shop in a new light. The proposition is that the union will recognize a foundry paying a minimum of \$3.30 per day, without an agreement and therefore an open shop, or will allow the scale to be signed at a minimum of \$3.20 a day, in which case the shop will be a closed one. A differential of 10 cents a day is thus given to induce the closed shop. If neither proposition is accepted it appears to be the intention to institute strikes at such foundries as refuse. As the members of the Manufacturers' Association with one exception are already operating in conformity with the open shop proposition at \$3.30 minimum, the men recognize no grievance at such shops. The Pittsburgh Valve, Foundry & Construction Company, not in the association, is the only concern which has signed the molders' scale, its signature being obtained last week.

New York Pig Iron Warrant Market.

The pig iron buying movement reached the pig iron warrant market in the Produce Exchange during the week ending at noon on Wednesday. The sales amounted to 1700 tons, exceeding those of last week by 200 tons and of the week before by 1000 tons. Prices were somewhat higher and the transactions recorded were as follows: 200 tons February foundry, at \$15.50; 200 August foundry, at \$15; 300 August regular, at \$14.80; 300 July regular, at \$14.80; 100 July foundry, at \$15.20; 100 July foundry, at \$15.30; 100 October foundry, at \$15.30; 100 August regular, at \$15.25; 100 October regular, at \$15.25; 100 October foundry, at \$15.50; 100 August regular, at \$15.25. The following prices were established on call Wednesday noon:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash	\$14.75			
July	15.00	\$15.50	\$15.00	\$15.50
August	15.00	15.50	15.00	15.75
September	15.10	15.75	15.10	15.50
October	15.20	15.50	15.10	15.60
November	15.15	15.75	15.10	15.70
December	15.15	15.50	15.20	15.75
February	15.25	15.50	15.40	16.00

The ore tonnage of the Bessemer Railroad in July will probably be 650,000 gross tons, against 627,000 tons in July of last year and 645,000 tons in August of last year, which has been the road's record tonnage for one month. The tonnage this year has been approximated: April, 300,000 tons; May, 631,000 tons, and June, 644,000 tons, making a total for the first seven months this year of 2,250,000 gross tons, which breaks the road's record for such periods. Estimates are unchanged for a 5,000,-

000-ton movement over the Bessemer road this year. The road to-day begins receiving steel cars on a 1000-car order placed with the Standard Steel Car Company. Shipments will probably be completed by the middle of August. This order was originally placed for March-April delivery, but at the request of the Duluth & Iron Range road in placing an order for 1800 cars, shipments to the Bessemer road were deferred. The Bessemer road has succeeded in meeting the requirements of the ore traffic despite the delay.

Pig Iron Production for the First Half of 1905.

The American Iron and Steel Association has received from the manufacturers full statistics of the production of pig iron in the United States in the first half of 1905. The total was 11,163,175 gross tons, against 8,323,595 tons in the last half of 1904 and 8,173,438 tons in the first half of 1904. The increase in production in the first half of 1905 as compared with the second half of 1904 amounted to 2,839,580 tons, and as compared with the first half to 2,989,737 tons. The united production of the second half of 1904 and the first half of 1905 amounted to 19,486,770 tons, against 16,475,323 tons in the second half of 1903 and the first half of 1904 and 18,720,100 tons in the second half of 1902 and the first half of 1903. The production in the first half of 1905 was much the largest in any half year in our history and larger than that of any whole year prior to 1898.

The production of Bessemer and low phosphorus pig iron in the first half of 1905 was 6,008,427 gross tons, against 4,567,713 tons in the last half of 1904 and 4,530,946 tons in the first half of 1904. The figures for the first half of 1905 include 77,637 tons of low phosphorus pig iron, against 103,364 tons in the last half of 1904.

The production of basic pig iron in the first half of 1905 was 1,966,592 gross tons, against 1,421,203 tons in the last half of 1904 and 1,061,901 tons in the first half of 1904. Basic pig iron made with charcoal is not included.

The production of charcoal pig iron in the first half of 1905 was 170,512 gross tons, against 124,173 tons in the last half of 1904 and 213,356 tons in the first half of 1904.

The production of spiegeleisen, ferromanganese, ferrophosphorus and ferro-Bessemer in the first half of 1905 was 129,040 gross tons, against 105,882 tons in the last half of 1904 and 114,510 tons in the first half of 1904. The production of ferromanganese alone in the first half of 1905 amounted to 35,221 tons, against 30,535 tons in the last half of 1904 and 26,541 tons in the first half of that year. The production of spiegeleisen alone in the first half of 1905 amounted to 90,113 tons, against 74,705 tons in the last half of 1904 and 87,665 tons in the first half of that year. The production of ferrophosphorus in the first half of 1905 amounted to 1206 tons, against 642 tons in the last half of 1904 and 304 tons in the first half. In the first half of 1905 there were made 2500 tons of ferro-Bessemer pig iron.

The stocks which were unsold in the hands of manufacturers or their agents or were under their control in warrant yards or elsewhere on June 30, 1905, amounted to 480,319 tons, against 408,792 tons on December 31, 1904; 623,254 tons on June 30, 1904, and 591,438 tons on December 31, 1903. On June 30, 1905, the American Pig Iron Storage Warrant Company had 88,900 tons of pig iron stored in its yards.

The whole number of furnaces in blast on June 30, 1905, was 294, against 261 on December 31, 1904, and 216 on June 30, 1904. The number of furnaces idle on June 30, 1905, was 138. Of the active furnaces on June 30, 1905, 229 used coke, 42 used anthracite coal and coke and 23 used charcoal.

On June 30, 1905, there were 11 furnaces in course of construction, of which 10 will use coke and 1 will use charcoal. Of the coke furnaces, 2 are being built in New York, 2 in Pennsylvania, 1 in Virginia, 1 in Tennessee, 1 in Alabama, 2 in Ohio and 1 in Colorado. The charcoal furnace is being built in Michigan.

Metal Market.

NEW YORK, July 26, 1905.

Pig Tin.—The market steadily advanced from day to day and on Monday 32c. was the ruling quotation. At this price there was a fair inquiry and some good buying. The market here did not show the full advance in London, but was quite excited. In this condition of affairs a cable from Rotterdam was received by the New York Metal Exchange, as follows: "It is proposed by the Government to have the Banca bimonthly sales during 1906 consist of 37,000 slabs each, equal to about 1250 tons, making a reduction of about 350 tons against this year's sales." The London market advanced £3 5s. on the strength of this during the day, while the New York market advanced 0.6c., or about \$13 a ton. To-day the London quotation closes at £150 15s. for spot, a price that has only been exceeded three times during the last half century. The quotation for futures closes at £149 17s. 6d., and the calls on the local exchange are 32.95c. to 33.15c. for spot and July, and 32.70c. to 33.10c. for August. It will be remembered that several years ago the Dutch Government curtailed the amount to be sold at each bimonthly sale, but after a few sales had been held the amount of metal sold was increased to the old figures. This rumor, coming as it does so near the periodic Banca sale, which will be held to-morrow, will probably strengthen the market for that sale. The arrivals so far this month have been very large, amounting to 3430 tons, and there are at the present time afloat for American ports 2185 tons.

Copper.—The market has advanced during the week and 15.12½c. to 15.25c. is quoted on the local exchange for both Lake and Electrolytic grades. Casting grades are held on the old figures of 14.75c. Outside sales have been made at higher figures than these and Electrolytic seems to be particularly strong, a sale of this grade having been made during the week at five points above Calumet & Hecla Lake. There is very little metal now in first hands that is for sale for July and August delivery, and sales have been made well into October and November. The demands for electrical development have been responsible for some of the July sales this year, and the fact that buyers are covering for such a long period ahead shows their disposition toward the market. The export business has fallen off considerably and the total amount exported during this month aggregates 12,944 tons, of which 850 tons went to China and the East. There has been considerably more activity in foreign markets, and traders on the London Exchange have bought more freely for both spot and future delivery. Quotations have advanced in sympathy with this movement, and stocks are now held at £67 15s., while future deliveries are strong at £68. Best Selected Copper has also advanced and the final quotation to-day on the London Exchange is £72 5s.

Pig Lead.—The market is strong in sympathy with other metals, and the ruling quotation is 4.60c. to 4.65c. The American Smelting & Refining Company has to-day advanced its quotation to 4.60c. for shipment Lead in 50-ton lots. In St. Louis the metal is also stronger, the ruling quotation being 4.50c. to 4.55c. London has likewise advanced, and the closing quotation on that exchange to-day is £14. Reports from the Joplin district are to the effect that shipments during the week ending July 22 were not effected by the floods which inundated many of the houses, but there is a likelihood of smaller shipments for the next month or six weeks from this cause.

Spelter.—The market has advanced because of floods in the producing district, which have necessitated closing down some of the mills. The ruling quotation for spot, July and August is 5.50c. to 5.60c. in New York and 5.40c. in St. Louis. There would be considerably more business in future lots if producers were disposed to make quotations for these deliveries, but it is practically impossible to secure a reasonable concession for shipments during the latter part of the year. In London the market is steady at £23 15s.

Antimony.—The quotation for Cookson's is practically nominal at 13.50c. and Hallett's is now for sale at 13c. Other brands can be purchased at 12c. to 12½c. At these figures there is very little buying and consumers are awaiting the time when prices will be more nearly normal.

Quicksilver.—There is a good business now going on and \$40.50 per flask is the ruling quotation for flasks of 75 lbs. in 100-flask lots. The market in London is unchanged, Rothchild and second-hands selling at £7 7s. 6d.

Nickel.—The market continues unchanged, and the ruling quotation is 40c. to 45c. for large lots. The demand is steady and stocks on hand are ample for present requirements.

Tin Plates.—Business is fair and there is considerably more demand for Coke Plates suitable for canning purposes. Terne Plates are a little dull on account of the unfavorable weather for roofing purposes. Quotation is unchanged at \$3.74 per box of 100-lb. IC Coke Plates, f.o.b. New York, or \$3.55, f.o.b. Pittsburgh. At the present time the mills are shipping very promptly, which indicates that they have

good stocks on hand. In Swansea Plates are unchanged at 11 shillings 7½ pence, and the stock on hand there July 8 was 224,014 boxes, as against 130,222 boxes the same time last year.

United States Steel Corporation Statement.

The directors of the United States Steel Corporation held their regular quarterly meeting on Tuesday, July 25, and in addition to declaring the quarterly dividend of 1¼ per cent. on the preferred stock, received the statement of the Controller for the quarter ending June 30, 1905. It makes the following showing:

Net Earnings.	
April, 1905.....	\$9,037,925
May, 1905.....	10,602,187
June, 1905.....	10,665,004
Total net earnings after deducting, each month, the expenditures for ordinary repairs, renewals and maintenance of plants, also interest on bonds and fixed charges of the subsidiary companies.....	\$30,305,116
Less appropriations for the following purposes—viz.:	
Sinking funds on bonds of subsidiary companies.....	\$482,991
Depreciation and reserve funds (regular provisions).....	5,009,563
Special improvement and replacement fund.....	1,000,000
	6,492,554
Balance of net earnings.....	\$23,812,562
Deduct:	
Interest for the quarter on United States Steel Corporation bonds held by the public.....	\$5,770,430
Sinking funds for the quarter on United States Steel Corporation bonds—viz.:	
Installments.....	\$1,012,500
Interest on bonds in sinking funds.....	154,032
	1,166,532
	6,936,962
Balance.....	\$16,875,600
Dividend for the quarter on preferred stock of United States Steel Corporation, 1¼ per cent.....	6,304,919
Surplus for the quarter.....	\$10,570,681
Less, appropriated from surplus for the following purposes—viz.:	
On account of expenditures made and to be made on authorized appropriations for additional property, construction and discharge of capital obligations.....	\$5,000,000
Specifically set aside for contemplated appropriations and expenditures.....	2,500,000
	7,500,000
Balance of surplus for the quarter.....	\$3,070,681

It was stated in connection with the meeting that the unfilled orders on the books of the subsidiary companies July 1, 1905, were 4,829,655 tons, as compared with 5,597,560 tons on April 1. Orders on the books July 1, 1904, were 3,192,277 tons; on July 1, 1903, 4,666,578 tons; on July 1, 1902, 4,741,993 tons.

It will be noticed that the deductions from the net earnings for the quarter as given above represent a marked increase over the deduction from earnings of the first quarter of 1905. The depreciation and reserve fund allowances were increased more than \$1,000,000 over those of the first quarter of this year and nearly \$2,000,000 over those of the second quarter of 1904. A deduction of \$1,000,000 is also made for "special improvement and replacement fund." Such deduction does not appear in the statement of the first quarter of this year nor in the statements of 1904. The appropriations from surplus will be seen to total \$7,500,000 and indicate the policy of the corporation to set aside liberal amounts for improvements and new construction from the earnings in good times to compensate for the absence of such appropriations in slack times.

Contracts have been let to the Long Arm System Company of Cleveland, Ohio, for installing its electrically operated bulkhead doors and hatch gears on the battleships Montana and South Carolina. The two vessels are now in course of construction by the Newport News Shipbuilding & Dry Dock Company. The Navy Department specifications for these war ships provided that "each (power) door must be capable of permitting operation on the spot by power or by hand from either side, and all such doors are to be capable of being closed by power simultaneously from an emergency station." The "Long Arm" system meets these requirements.

HARDWARE.

THE American Hardware Manufacturers' Association is showing its vigilance in calling attention to the real character of a movement which has for some time been quietly under way, one result of which would be the opening of the mails for the transmission of merchandise on very liberal lines. An association of New York manufacturers, which includes in its membership some Hardware manufacturers, has been taking an active part in the promotion of a scheme of postal reform which is, intentionally or unintentionally, in the interest of a parcels post. The aim of the effort is somewhat disguised, as it purports to be chiefly for the securing of 1-cent postage, but coupled with this is the proposal that merchandise and printed matter of all kinds be transmitted through the mails at figures "low enough to serve the useful purpose of a parcels post." For the promotion of this project the Postal Committee of the local association has prepared leaflets, which they furnish (for a consideration), such leaflets explaining the movement and containing a blank to be sent to members of Congress, as follows:

This is to urge your support of a postal law providing for two classes of mail matter only:

1. *Letters and sealed packages at 1 cent per ounce or fraction.*

2. *All other mailable matter at a rate high enough to direct the large bulk of merchandise to natural channels of distribution, but low enough to serve the useful purpose of a Parcels Post.*

In this frank statement of the scheme the fact that it is in the interest of a parcels post is disclosed.

Notwithstanding this feature of the project we find that a well-known house organ published by a prominent Hardware jobbing concern refers to the movement with approval, emphasizing, however, only the fact that 1-cent postage will thereby be secured. These merchants have apparently overlooked the real effect of the proposed changes, which would be greatly to the interest of the catalogue houses. They are thus in the position of other merchants and manufacturers, including some very well-known houses, who gave their endorsement a year or two ago to another project for the establishment of a parcels post, assuming because it claimed to aim at "postal progress" that the progress would be in the right direction. When they discovered, however, its real character they promptly became opponents instead of promoters of the project. Other Hardware jobbers and manufacturers are in this case on the alert and there is little reason to believe that this plausible and insidious effort will meet with approval from the Hardware trade, from merchants generally or from the public at large. The opinion is indeed expressed that many of the manufacturers who are identified with the association which is pushing the project through the efforts of a zealous committee are not in sympathy with or indeed aware of the action which in their name is being taken.

Alertness on the part of the trade is evidently in order, as those who would divert the mails from their primary and legitimate province as the channel for the distribution of written and printed matter are sure to be unremitting in their efforts to transform them into carriers of merchandise and thus promote the advan-

tage of the few to the detriment of the many and at the expense of the best efficiency in postal service.

Condition of Trade.

Without any marked increase in the volume of business as between manufacturers and the merchants throughout the country there continues to be an excellent feeling in trade circles. The fact that there is something of a let-up in the stress of enterprise and aggressiveness in the prosecution of commercial interests does not indicate a lack of hopefulness for fall business or any apprehension for the future. In connection with the vacation period there is a slackening of production in many mills and factories, coupled naturally with a cleaning up of plants, the making of improvements and the getting ready for an early resumption of manufacturing activities. It is a significant fact that notwithstanding the great increase in facilities by which the manufacturers' capacity has within a few years been so materially enlarged, at the present time there is much doing in this direction, as many manufacturers are enlarging their plants or in one way or another making them more effective. Thus in the activity in the building trades there is no doubt that work on factories and plants has a respectable place, indicating the continued enterprise of manufacturers and the growth of the productive capacity of the country. Notwithstanding the progress thus made, it is a striking indication of the great volume of business doing that not a few goods are hard to get, as merchants have to wait beyond their convenience for the execution of their orders. A good many manufacturers are, however, accumulating goods for stock, and while they would prefer to be running their establishments under the pressure of well filled order books, they recognize the advantage there is in being in position to supply goods promptly and thus serve their customers the better and escape their clamor over belated shipments. The trade does not appear to be disquieted about the rumors of injury to the crops, which, whatever exceptions there may be here and there, appear sufficiently assured to lay the basis for a large and general prosperity.

Chicago.

Local Hardware trade in Chicago is rather better than is usual at this time of year. One prominent factor in this satisfactory condition is the extremely large building operations going on in the city and suburbs. One Builders' Hardware firm has in hand inquiries for Hardware for downtown office buildings aggregating fully \$40,000, including Borland Block, the Majestic Theater, Northern Trust and American Trust and Savings Bank buildings. Contract for the Hardware for the new Brevoort Hotel, aggregating over \$5000, was placed with Orr & Lockett Hardware Company. Russell & Erwin Mfg. Company's goods will be furnished. The South Park commissioners have also placed with the same firm a good sized contract for Hardware for park gymnasium buildings. The Ford Auger Bit Company has adopted the standard list on Auger and Car Bits, which is only another illustration of the general tendency to standardize prices on the part of the manufacturers of Hardware generally. Demand for fall goods is excellent and rather better than is usual at this time of year. This is particularly true of Axes and Scoops. Not much is expected in the way of contracts on Stove Pipe, Elbows, Hods and Stove Boards until next month, as the contracting for these lines for fall delivery was exceptionally heavy in March and April. The year has been of course a disappointing one in Pipe, Garden Hose and other supplies that thrive with dry weather, but notwithstanding this fact sellers of Garden Hose believe that before the year is over their sales will be fully up to the average, if not above. Both Wire and Cut Nails are somewhat weak, concessions being named by smaller

mills that are desirous of turning stocks on hand. Many mills are closed down during the month of July. Other Wire products, such as Barb Wire and Smooth Fence Wire, are rather stronger than Wire Nails, but here, too, there is some disposition to cut prices to secure immediate shipment of stocks on hand.

Cleveland.

THE W. BINGHAM COMPANY.—Trade and traffic in this section are just a little quiet at this time, as many salesmen are off the road, taking their annual vacations and recuperating for the fall campaign. However, there are a large number of orders coming to us by mail from our customers for shipment by freight and express.

There is a loud call just at present for Harvesting Tools. The trade this year on Steel Goods, Scythes, &c., has been quite satisfactory as regards quantity, but the margin of profit has been very small to the jobber. However, we have to be content with small margins nowadays and make up for it in volume of business.

Stove Boards, Elbows, Coal Hods, Sheet Iron, Meat Choppers and Stuffers, Buck Saws, Cross Cut Saws, Lanterns and Axes that were sold early are now going forward to customers, as they like to get them in while the weather is dry, so they will be sure of their not being damaged in transit.

We are looking forward to a large, remunerative trade the balance of the summer and fall. Prospects are bright and cheerful.

NOTES ON PRICES.

Wire Nails.—The market continues firm as a rule, with some increase in demand over that of a month ago. Many of the mills are shut down for annual repairs and inventory, correspondingly reducing production. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....\$1.80
Carloads to retailers.....1.85

New York.—The local demand is somewhat of a surprise to jobbers, and the business done during July, if orders continue as large and numerous throughout the balance of the month, will probably exceed that for the corresponding month of previous years. Some difficulty is still experienced on account of the railways not making prompt deliveries. The market remains firm and prices are unchanged, as follows: Single carloads, \$1.99; small lots from store, \$2.05.

Chicago.—Prices with few exceptions are held as firm as is usual at this midseason period. Consumption of Nails has been unusually large, and had it not been for the extremely large production prices would rule higher than they do. Jobbers' stocks are growing smaller and the day of replenishment is not far off. Quotations are on the basis of \$1.95 in car lots to jobbers, \$2 in car lots to retailers, with 5 cents advance for less than car lots from mill.

Pittsburgh.—Demand has not further improved, although it is better than it was a month ago. There is no trouble to get deliveries, although mills have been curtailing production since the first of the month, as they all entered upon this period with some accumulation. The large local independent mill will resume operations the end of the month, having been shut down since about the first. The leading interest has had about two-thirds of its capacity idle since the first. There is general satisfaction that the curtailment programme agreed to at the Chicago meeting last month is working out so well. Prices are well maintained, there being no shading, unless in some indirect manner, and we continue to quote \$1.80 in carload lots to jobbers and \$1.85 to single carload buyers, f.o.b. Pittsburgh, plus actual rail freight.

Cut Nails.—The Cut Nail Association holds a meeting to-day (Wednesday). The market continues in about the same condition as for some time, \$1.70, base, f.o.b. maker's mill, being the general price for Steel Cut Nails, which is, however, sometimes shaded. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails.

New York.—The amount of business being done in the local market is comparatively small in proportion to that in Wire Nails. Owing to the irregularity in mill prices, small lots from store are now quoted on the basis of \$1.90 to \$1.95.

Chicago.—Open quotations are in the neighborhood of \$1.90, Chicago, in car lots, though some mills are quoting a much lower price than this to jobbers in large lots on Cut Steel Nails. The nominal 10-cent advance for Iron Nails is still in force, and is paid to such producers as have the reputation of actually furnishing Iron Nails. Small lots of Steel Nails from store are offered at from \$2 to \$2.05 a keg, with Iron Nails 10 cents higher.

Pittsburgh.—No special attention is directed here to the meeting of the association to be held Wednesday of this week, as the market has been below the official prices for some time. We continue to quote \$1.70 for Steel Cut and \$1.80 for Iron Cut Nails, f.o.b. mill, while good buyers can do about 5 cents per keg less on carload lots.

Barb Wire.—The market continues quiet, with limited demand and occasional shading of official prices. Quotations are unchanged, as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

Chicago.—Whether it has been the result of the Wheat rust scare or some other influence, the Barb Wire market has been a little weaker than it was at last report, though prices are officially unchanged as follows: Painted Wire, \$2.10; Galvanized, \$2.40; car lots to retailers, 5 cents higher; less than car lots, Painted Wire, \$2.25; Galvanized, \$2.55; Staples, Bright, in car lots to jobbers, \$2.05; Galvanized, \$2.35; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Demand continues rather light, and there is still shading here and there. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

Smooth Fence Wire.—Business is confined to a large extent to small orders to keep up stock, the regular placing of contract orders not having yet commenced. The market is generally regarded firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.65
Retailers, carloads.....1.70

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago.—The contracting movement has not yet started up and the pick-up buying is of a desultory character. Prices are held fairly firm on the basis of \$1.80 for Annealed, car lots to jobbers, and \$1.85 in car lots to retailers, with 5 cents advance for less than car lots and 30 cents premium over Annealed for Galvanized.

Pittsburgh.—The market is fairly firm, there being no open shading at least. Demand is moderate. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.65
Retailers, carloads.....1.70

Registers.—Midsummer finds all the Register manufacturers exceedingly busy. A great deal of building is reported in all quarters and plants are running to full capacity to keep up with their orders. Expressions from various sources indicate that prices are being firmly maintained, as is natural when there is business enough to go around and the prospects for the coming months are so satisfactory. At the same time manufacturers who are apparently working together in entire agreement express themselves as unfavorable to a further advance,

and express the opinion that the present discounts of 70 to 70 and 10 per cent. will remain in force.

Augers and Bits.—The market on Augers and Bits is on the whole in good condition and prices are well maintained by the manufacturers, who are working together with a good degree of harmony. There is, however, some irregularity in the prices quoted by the jobbers, especially on the common Augers and Bits. A discount of 70 and 10 would in a general way represent the figure at which retail merchants should buy the goods, allowing for the jobbers' profit on the present basis of cost, but some of the jobbers and possibly some of the manufacturers are selling this class of trade at discounts ranging from 75 to 75 and 5 per cent. Some jobbers are in a position thus to undersell the general market in view of goods purchased at lower figures and in this way some irregularity is brought into the market. There is also some unevenness in the price of the Jennings' Pattern Bits, owing in part to the same reason, but also on account of difference in the finish of the goods, the regular finish being regularly quoted to the small trade at discount 50 and 10, or a little better, while the Black Lip and Blued are quoted at discount 60 and 10.

Ford Auger Bit Company.—Ford Auger Bit Company, Holyoke, Mass., has adopted revised list prices for its Auger Bits and Car Bits. The revision of the list has been made with a view to removing inequalities which existed in the lists thus superseded.

Rubber Goods.—Prices of Rubber Goods continue "subject to change without notice." No general price agreement exists among the manufacturers except in regard to Rubber boots and shoes, the production of which to a certain extent is controlled by a combination. All the factories in this line make footwear practically on the same models and in two or three standard qualities. But Rubber Hose, for example, is made by a much larger number of factories, acting independently and varying widely in financial strength and managerial ability. A single factory may offer a dozen brands of Garden Hose at as many different prices to meet every demand of consumption or element of selling competition so that anything like uniformity is impossible. For a year or more, however, on account of the continued advance in the cost of raw materials makers of mechanical Rubber Goods have labored constantly to get better prices, with the result that on the whole consumers are paying something more. The result has not been to diminish consumption, as shown by higher imports of raw Rubber during the past year than ever before. In fact, fine Para (Brazilian) Rubber sells to-day at \$1.30 to \$1.37 per pound against one-half these figures 15 years ago, because of a more rapid growth of consumption than of the production of Rubber. It is this condition that enables manufacturers gradually to obtain higher prices while paying more for raw material. There is a limit, however, to price advances, but manufacturers have been alert to improve their factory practice, so that many economies hitherto unknown make profits still possible. There is apparent no indication that Rubber will cost less during the remainder of the year, while if the report of a smaller cotton crop should prove correct a higher rate for this important raw material used in Rubber manufacture may be expected.

There is some agreement in regard to prices of Tires, dating from last September, which it is asserted has not been rigidly maintained. At the expiration of 12 months, if this should be entered into again, it would not be surprising if higher rates are announced.

It is apparent that a revival in the Bicycle trade is going on, making a better demand than for several years past for Bicycle Tires and repair sundries. It seems too that the detachable Bicycle Tire is gaining in favor, having proved so much more satisfactory on automobiles than the single tube type. The Bicycle retains its popularity in all other countries and there appears no reason why the United States should be an exception in this regard.

Recently the important combination in the mechanical goods trade, the Rubber Goods Mfg. Company, was merged into the United States Rubber Company, hitherto engaged in the Rubber footwear trade alone. The new

capitalization is \$75,000,000, and the production now includes not only Tires on an enormous scale, but Hose, Belting and mechanical goods generally. It must not be supposed, however, that a monopoly has been established in the trade. There are many large and successful independent mechanical goods factories, controlling more than half the trade. Besides which there is the very extensive trade in insulated Electrical Wires, druggists' goods, dental goods, Sporting Goods, stationers' goods, Rubber clothing and other articles, the sum total of which is very great, and so long as these are not controlled by combinations a monopoly of the whole industry is out of the question.

Cotton Goods.—The probable future of the market of Cotton Sash Cord, Rope, Twines, &c., is largely a matter of opinion, depending on the number of bales of Cotton the present crop will produce. This of course varies with individuals according to their estimate based upon Government reports or upon other sources of information. Regarding the present condition of the Cotton goods market there is no uncertainty. Goods are scarce and prices are advancing. Last year was one of speculation. Jobbers did not want to assume the burden of carrying stocks, neither did manufacturers, so that a large proportion of the factories were run on only part time. This resulted in there being no accumulation of stocks in manufacturers' hands to meet the large demand, especially for Sash Cord. Many factories are now being operated day and night to supply the demand for Cotton goods in general. Braided Sash Cord Nos. 8 to 12 is now quoted at 23 cents per pound, and this is a fair basis for comparison of prices on other Cotton goods. Manufacturers probably could get an advance of 1 to 2 cents on the entire line of Cotton goods for the asking, as they are very much behind in their orders.

Window Glass.—It is reported that the American Window Glass Company sold a considerable quantity of Glass last week to jobbers at 87 per cent. discount from manufacturers' list. The Glass for which this price was obtained was in brackets in which the greatest scarcity exists. It seems probable that Glass will command high prices up to the time hand factories commence operations in the fall. The Wage Committee of the Window Glass manufacturers has arranged to meet a committee representing Glass workers in the near future, to arrange wages for the coming fire.

Rope.—There is a considerable quantity of Rope changing hands, but the market lacks activity and snap. Mixed Manila Rope has been sold as low as 9¼ to 9½ cents per pound in the local market. Prices for other kinds of Cordage are also irregular. General quotations, on the basis of 7-16 inch diameter and larger, are as follows: Pure Manila, 11½ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 cents per pound, the above figures being shaded ¼ to ½ cent per pound, according to seller and buyer.

Paints and Colors.—**Leads.**—The recent advances in the price of Linseed Oil have not yet affected the value of Lead in Oil. Specifications on White Lead in Oil are being freely made on contract orders, and additional orders are being placed for delivery running into next month. The consumption of White Lead in and about this city has been and is large, and the outlook for the remainder of the painting season is satisfactory. Quotations are as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Linseed Oil.—On July 21 prices were advanced 1 cent per gallon. The market for Seed and Oil is in the control of the largest interest, and will likely continue so until the first part of October, when Oil from new Seed will probably be on the market. The course of prices after that time will depend in some measure upon the size of the domestic and foreign crops of Seed. It is understood that all but one of the independent mills in this country are closed down and that the crushers prefer holding their Oil for future advances rather than taking contract orders for future delivery. Buyers as a rule are only purchasing in jobbing lots for immediate requirements, but business in this way is quite active. New York quotations are as follows: City Raw, 53 to

54 cents per gallon, according to quantity, and State and Western Raw, 51 cents.

Spirits Turpentine.—A quiet market both South and North, with only hand to mouth buying at this point in small lots, has reduced quotations about 2 cents below those of last week. New York quotations, according to quantity, are as follows: Oil barrels, 60½ to 61 cents; machine made barrels, 61 to 61½ cents per gallon.

Rural Free Delivery and the Catalogue Houses.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., July 25, 1905.

POSTMASTER-GENERAL CORTELYOU has instituted a reform in the rural free delivery service designed to deprive the catalogue houses of an advantage they have enjoyed for more than two years, thanks to the favoritism shown them by the late Superintendent of Free Delivery, A. W. Machen, whose share in the recently discovered frauds upon the Government is familiar to our readers. Postmaster-General Cortelyou's action will prevent catalogue houses from obtaining the names of parties residing on rural routes without incurring an expense out of proportion to their value, and the distribution of mail order catalogues hereafter will be made so costly as to materially restrict their circulation in the rural districts.

Retail dealers in Hardware and in other lines have frequently during the past year or two been puzzled to learn the methods employed by the mail order houses to secure the names of their customers for the purpose of supplying them with catalogues. It has occasionally happened that a single merchant has found that 50 or 100 of his customers have received these catalogues within a period of a few days and has been called upon to meet prices quoted therein on a great variety of articles. It now transpires that these names were obtained as the result of a secret order given by Superintendent Machen in December, 1902, and which has just been finally revoked. Machen's order, which unquestionably was issued at the solicitation of certain mail order establishments, was designed to enable these concerns to secure mailing lists worth many thousands of dollars at a trifling expense. In spite of the fact that the postal regulations expressly prohibit postmasters from furnishing lists of patrons of their offices, Machen prepared an order, to which he secured the signature of the First Assistant Postmaster-General by false representations, and which he forwarded to postmasters in certain sections, although carefully withholding it from the official files of the Department. This order permitted the postmasters to supply lists of the patrons of the routes radiating from their offices to any one who might apply for them. The result was that the postmasters in certain parts of the country, and especially in those sections where the rural free delivery service has recently been installed, furnished many thousand names to the mail order houses, and thus provided a channel through which large quantities of catalogues were speedily distributed.

Half a Million Names.

Information with regard to the existence of this order was first received by the Postmaster-General through a complaint from a merchant who had learned of it from his local postmaster. The matter was referred to Fourth Assistant Postmaster-General Bristow, who was then engaged in investigating irregularities in the Department, and an order was issued designed to put an end to the practice. Through a clerical error, however, the order was so phrased as to apply only to postmasters who up to the time of its receipt had not prepared such lists. Consequently, the catalogue houses have been able not only to secure many complete lists of the patrons of the rural routes, but also to have their lists corrected from time to time, thus keeping them up to date. It is estimated that lists were thus prepared by postmasters aggregating over half a million names. Postmaster-General Cortelyou's order is peremptory, and hereafter no postmaster or postal official will be permitted to furnish any information whatever with regard to the names or ad-

resses of patrons of post offices or of rural routes radiating therefrom. In this connection the Postmaster-General says:

Section 549 of the postal laws and regulations, of which the rule prohibiting the furnishing of lists of names of patrons of post offices is a part, prohibits the furnishing of information concerning mail matter except to the person addressed or his authorized agent, or an authorized representative of the Department.

Such information is in the possession of postmasters and other employees of the postal service as the agents of the Department, and is regarded as confidential. The names and addresses on mail matter are there for the sole purpose of enabling the Department's agents to effect delivery thereof.

More Than 32,000 Rural Free Delivery Routes.

The wholesale expansion of the rural free delivery service during the past three years, providing as it does a channel for the distribution of catalogues and merchandise from mail order concerns, has seriously injured the business of retailers in all lines in those sections in which large numbers of routes have been installed. It will doubtless interest the Hardware trade to learn that this service has been expanded until there are now 32,058 routes in operation. The States in which more than 1000 routes have been installed are as follows: Illinois, 2536; Ohio, 2275; Iowa, 2107; Indiana, 1978; Pennsylvania, 1778; Michigan, 1694; New York, 1653; Missouri, 1614; Kansas, 1463; Wisconsin, 1380; Tennessee, 1376; Texas, 1320; Minnesota, 1210, and Georgia, 1182.

An important recent tendency in the development of the service has been its increase in the Southern States, where heretofore few routes have been established. It is significant that, in connection with this expansion, the catalogue houses are reaching out after trade in the South, and, as reported in *The Iron Age* not long ago, are now advertising in the Southern papers with a view to forming connections with manufacturers from whose factories they propose to ship direct to their customers, thus effecting a large saving in freights. The post office authorities make the encouraging statement that the rate of expansion in the rural service has probably passed the maximum, nearly all the country having a sufficiently dense population to meet the requirement of 100 families to 25 miles of route having been supplied with service. The annual cost of this service is now approximately \$27,000,000, and as the receipts therefrom are only about \$4,000,000, the taxpayers at large are called upon to pay about \$23,000,000 annually for benefits which accrue to less than 10 per cent. of the population of the country.

W. L. C.

UNION METALLIC CARTRIDGE COMPANY'S NEW CATALOGUE.

THE UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn., has just issued its first illustrated catalogue of Ammunition, showing actual size engravings of everything it makes in Metallic Cartridges, empty and loaded Paper Shells, Brass Shot Shells, Primers, Gun Wads, Percussion Caps and Ammunition for rapid fire guns. The book contains 166 pages, each 5½ x 8¼ inches, and the company believes is the first complete book of this character published. Some of the features of the book are code words for every item to be used in wiring orders and *fac-simile* signed guarantees of different manufacturers of Firearms in connection with the Cartridges made for each maker's particular arm of varying calibers. An indication of the growth of this business is afforded by the fact that the sizes of Cartridges made by the Union Metallic Cartridge Company in 1875 numbered 24 rim fire and 5 central fire Cartridges. Now there are about 500 different sizes and kinds of Rifle and Pistol Cartridges for sporting and military uses. In December, 1888, the company began loading Shotgun Shells when they had two gauges only, Nos. 12 and 10, each gauge having a total of four combinations of load. Now in this line there are nine different gauges and four different qualities, covering not less than 200 different combinations of load. There is also a pocket edition of the catalogue which gives all the Ammunition the company make, but without the illustrations of Pistol and Rifle Cartridges, code, &c.

IOWA ASSOCIATION NOTES.

THE Board of Directors of the Iowa Hardware Dealers' Mutual Insurance Association met in regular semiannual session at the office of the secretary, Mason City, Iowa, on the 12th and 13th inst. The books and affairs of the association were checked and audited, and matters relating to the growth of the association were carefully gone over and plans perfected in that direction. From the "Statement of Business," dated July 10, it appears that the total amount of insurance written by the association to date is \$1,004,459, the insurance in force amounting to \$677,309, and insurance written since January 1, 1905, \$448,675.

The policy holders of the Iowa Hardware Dealers' Mutual Insurance Association met in special session at the office of the secretary on the 13th inst., and among other business transacted authorized the change of the name of the association to the Iowa Hardware Mutual Insurance Association. They were invited by the Board of Directors to participate in the discussion of the executive business at the meeting of the board, thus giving the directors an opportunity of getting the views of the members. Every one present was enthusiastic about the good work accomplished, and congratulations were extended to those who took an active part in organizing the insurance department on the fact that it is doing even better than was anticipated by the committee two years ago.

On Thursday and Friday, July 13 and 14, about 500 of the Hardware people of the State, including relatives and friends and the traveling Hardware salesmen, held their third annual outing and picnic at Mason City and Clear Lake. The weather was perfect, no accidents marred the occasion and every number of the programme was carried out in such a way that the participants are already longing for next year's gathering.

On Wednesday, July 12, the Executive Committee of the Iowa Retail Hardware Dealers' Association, consisting of President H. S. Vincent, Fort Dodge; S. R. Miles, Mason City, and C. E. Haas, Le Mars, met to discuss the affairs of the Hardware association. Plans were formulated looking toward an innovation at the annual meeting, to be held in Des Moines next February. The association proposes to control the matter of exhibits made at the convention and is casting about to find suitable quarters in which to install the exhibits at or near the convention hall, in order to avoid the collision of interests when the exhibits are made at a hotel and are kept open during the sessions of the convention. If the exhibits could be made at the convention hall, it is thought there would be no division of interest and the association would derive a decided financial benefit from the rentals of space and admission fees to the general public. A. R. Sale, the secretary, was also authorized to extend the advertising area of the convention programme.

A great convention is being planned for Iowa Hardware merchants, who are beginning to learn the value of association work, which unifies the efforts of the strongest and best men in the business, making a force to be reckoned with.

The Schell Hardware Company, with general offices at Connellsville, Pa., and stores at Connellsville, Somerset and Monessen, has taken over the Hunter Heating Company of Unlontown, where a store will also be established. The company does a jobbing and retail business in each of its stores and will pay particular attention to Plumbing, Heating and Tinning contracts under the direction of J. A. Hunter. P. A. Schell is president of the company, E. C. Higbee vice-president and C. D. Schell secretary and treasurer.

The Storm & Erickson Bros. Hardware Company, Oklahoma City, O. T., has been incorporated and opened up July 1 in the Shelf Hardware, Stove, Tinware and Sporting Goods business.

ILLINOIS HARDWARE CONVENTION NEXT FEBRUARY.

G. R. LOTT, secretary of the Chicago Retail Hardware Association, is sending a circular to the trade announcing that the officers of the Illinois Hardware Association have placed in the hands of the Chicago Association the entire arrangements for the next annual convention of the State body. As stated in a previous issue of *The Iron Age* this convention will be held at the First Regiment Armory, Chicago, February 20, 21 and 22. Convention meetings will be held in the officers' quarters on the second floor of the armory, while the entire main floor space of 150 x 150 feet has been divided into unit spaces of 10 x 12 feet for exhibitors. Space is already being rented, and Mr. Lott informs us that his plat is filling up rapidly. A uniform charge of \$25 per unit space 10 x 12 feet is made, this fee covering not only the three days of convention, but the day before and the day after to permit installing and removing exhibits. Exhibitors can take as many adjoining units as may be necessary to display their lines. Exhibitors will be provided with badges which will admit them free of charge at the door, though an admission charge of 25 cents is made to the general public. Firms desiring exhibit space should address Gustav R. Lott, 1002 West Lake street, Chicago.

MICHIGAN ASSOCIATION MEETING.

THE eleventh annual convention of the Michigan Retail Hardware Dealers' Association will be held in the Temple of Music, Saginaw, August 9, 10 and 11. Since the last annual meeting nearly 300 new members have enrolled with the association, all of whom, we are advised, are showing a keen interest in the work. An elaborate programme of business and entertainment has been prepared for the three days covered by the convention, and those who participate should derive much instruction and enjoyment from the occasion. Among prominent Hardware merchants from other States who will be present at the meeting are W. P. Bogardus, president of the National Association; W. P. Lewis, ex-president of the National and Indiana associations; A. T. Stebbins, president of the Minnesota Association, and C. A. Peck, secretary-treasurer of the Wisconsin Association. Mr. Bogardus will tell something about the splendid work, under his efficient leadership, which the National Association is doing, while Messrs. Lewis, Stebbins and Peck will discuss the subject of mutual fire insurance, with which they have had much to do. Papers on interesting and timely trade topics will be read by T. Frank Ireland of Belding, Henry C. Weber of Detroit and E. B. Standart of Holland. The ever fertile Question Box will also be in evidence. Friday, the third day, has been designated "Jobbers', Manufacturers' and Traveling Representatives' Day." The entire programme for this day has been turned over to a committee of salesmen, of which T. J. Furlong of St. Ignace is chairman, announcement of the interesting plans of which will be made at the convention. We understand that more interest is being taken in the coming convention by the Hardware merchants of the State than ever before, and Secretary A. J. Scott of Marine City would not be astonished if 300 members put in an appearance, besides a large representation of manufacturing and jobbing interests.

D. H. Smith, for more than 40 years in the Hardware business in Sedalia, Mo., has retired, having disposed of his interest in the Smith-Marshall-Howe Hardware Company to Harry W. Knight, for many years connected with the Biddle Hardware Company, Philadelphia, Pa. Mr. Knight has succeeded Mr. Smith as president of the company, the style of which has been changed to the Knight-Marshall-Howe Hardware Company, Messrs. Marshall and Howe retaining their interests and the business otherwise continuing as before with the same capital stock of \$40,000.

FOURTH ANNUAL CONVENTION NATIONAL CYCLE TRADE ASSOCIATION.

THE fourth annual meeting of the National Cycle Trade Association was held in New York, Tuesday and Wednesday, July 25 and 26, at the Astor House. There was a meeting of the Executive Committee in the secretary's office in the Irving Building at 10.30 a.m., Tuesday, and a meeting of the members of the association at the Astor House at 11.30 a.m., the latter meeting extending well into the afternoon. After a brief recess the joint meeting of jobbers and manufacturers was called to order, Charles L. Kelsey of the Kelsey Company, Buffalo, N. Y., presiding. At this meeting William F. Remppis, proprietor of the Reading Standard Cycle Mfg. Company, was chosen vice-president. Mr. Kelsey made an excellent address in which trade conditions between the jobbers and manufacturers were discussed, and in which a number of suggestions for mutual benefit were made. He also submitted for consideration the advisability of choosing as a meeting place for next year some city at least as far west as Detroit, Mich., with a view to getting out an even larger attendance of jobbers and manufacturers. Ralph D. Webster of Elmira, N. Y., delivered an address of welcome to the jobbers which was eloquently responded to by Charles H. Turner, president of the Albany Hardware & Iron Company. The secretary of the association, A. M. Scheffey, then reviewed his year's work and was followed by other members of the organization as well as by some representatives of the manufacturers, one of whom was William A. Graham of J. H. Graham & Co. Mr. Graham dwelt on the value of association work and said that even better results were possible, adding that he favored a manufacturers' committee to be appointed for the purpose of working with the jobbers along the lines of restricted prices. In his opinion jobbers should support the manufacturers in such maintenance. With restricted prices as now conducted he believed the jobber could get as much profit in an open market as under the present system of restriction. With a view to accomplishing something substantial, Mr. Graham offered a resolution for the purpose of ascertaining the sentiment as to the advisability of forming an association of manufacturers in this line of trade, and it was finally determined to have an informal meeting of the manufacturers on Wednesday morning to discuss the proposition. Quite a number of manufacturers came together in accordance with this plan, and after some consideration a committee was appointed, in whose hands was left the decision as to what shall be done.

Other addresses were made by Geo. W. Nock of Geo. W. Nock & Co., Philadelphia; Charles W. Leng, former president of the association, and E. J. Lloyd of the Bindley Hardware Company, Pittsburgh, who strongly favored restricted prices by the manufacturer, believing that if such were adopted 95 per cent. of the jobbers would adhere to them, the other 5 per cent. being given to understand by manufacturers that if they did not maintain prices their supply would be cut off.

The social side of the meeting was a special feature, the arrangements being supervised and carried out by an Entertainment Committee of 18 representatives of manufacturers. On Tuesday evening there was a dinner at the Café Martin, followed by a theater party at the New York Theater Roof Garden. Wednesday there was an excursion to Coney Island, including visits to Luna Park and Dreamland. On Thursday an automobile trip has been arranged for, taking in the points of interest about New York. The immediate charge of the entertainment features was in the hands of W. J. Surre of the Corbin Screw Corporation, who ably discharged his duties.

THE WASHINGTON, D. C., CONVENTIONS.

THE annual meetings of the American Hardware Manufacturers' Association and the National Hardware Association will be held simultaneously at Washington, D. C., on November 8, 9 and 10. The headquarters of the Manufacturers' Association will be at the New Willard Hotel.

TRADE ITEMS.

CHARLES E. NEWTON has been elected treasurer of the Jewell Belting Company, Hartford, Conn., to fill the vacancy caused by the death of Charles A. Jewell. Charles L. Tolles, formerly assistant secretary of the company, has been elected secretary. Pliny Jewell continues as president and Lyman B. Jewell as vice-president. These officers and Edwin H. Bingham constitute the Board of Directors.

J. N. LIMEBURNER, 84-86 Chambers street, New York, has been appointed Eastern agent for the line of Brass Cuspidors manufactured by the Smedley & Blake Mfg. Company, Detroit, Mich. There is a large variety of shapes and sizes ranging from 4½ to 12 inches high and from 6½ to 10 inches in diameter. They are made of brass in both natural and nicked finishes and many of them are self righting. The company also catalogues a line of metal society goods, including Shields and Helmets in a number of styles, which are sold direct from Detroit.

THE MARLEY HARDWARE & MFG. COMPANY, Greenville, S. C., has been incorporated with a capital stock of \$75,000 to conduct a wholesale and retail Hardware business. It will also manufacture Agricultural Implements, Buggies and Farm Wagons. In addition to the four-story building now occupied, a two-story brick paint shop and storage room is in process of construction and as soon as that is completed a three-story building 50 x 130 feet will be begun. Manufacturers are requested to mail catalogues covering needs for these buildings as regards both construction and steam heating.

At the annual meeting of the Chapin-Stephens Company, manufacturer of Rules, Planes, Levels, &c., Pine Meadow, Conn., held on the 19th inst., the Hon. Charles F. Brooker's name was added to the Board of Directors. Mr. Brooker is president of the Coe Brass Mfg. Company of Torrington, Conn., also president of the American Brass Company and a member of the Board of Directors of the Consolidated Railroad. The election of Mr. Brooker was to fill the vacancy caused by the sudden death last May of Virgil P. Humason, second vice-president and manager of the company's New York store. The other members of the board were re-elected, also the other officers of the company.

THE KEYSTONE WIRE MATTING COMPANY, manufacturer of the Keystone Mats and Matting, Beaver Falls, Pa., where it has been located for a number of years, owning its own factory buildings, &c., entirely devoted to the manufacture of Mats, desires to inform the trade that it has not sold any part of its interests to any other concern. This is done in view of an announcement mailed to the trade in regard to the purchase of a concern of somewhat similar name with which the Beaver Falls company is in no way connected. The company is making the Keystone continuous crimp flexible Steel Mats, as heretofore.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM THE SPARKS-SAXON HARDWARE COMPANY, Albany, Ga., which has opened a store for handling General Hardware, Stoves, Tinware, &c.

FROM A. REUTER, Franklin, La., who has succeeded A. Reuter & Co.

FROM BIRRELL & Co., Kinsman, Ohio, who have succeeded Clark & Birrell in the general Hardware, Implement, Stove and Harness business. Mr. Clark sold his interest in the firm to John P. Karr.

Correspondence.

SPECIAL BRANDS AND UNKNOWN MANUFACTURERS.

To the Editor: I have been much interested in the controversy between manufacturers and jobbers re special brands.

A manufacturer who makes special brands is at the absolute mercy of the jobber for whom he manufactures.

THE JOBBER WILL CHANGE

about from one manufacturer to another for a very small advantage in price. No matter how good the manufacturer makes his goods with special brands he never can realize any benefit from it in the way of reputation, because no retailer or consumer knows him in the case, and the only advantage he gets is the immediate profit on each transaction, with the great risk of losing that every time the jobber wants to place an order. He therefore goes on year after year making special brands for various jobbers who are all the time crowding him in price until finally some "fool" manufacturer starts up, cuts his trade entirely from under him, and leaves him high and dry without trade or reputation.

The other side is that unless a manufacturer is prepared to go to the expense of introducing his own brands through retailers or even to consumers, and so create a demand that will

FORCE JOBBERS TO PURCHASE

from him, he might as well drop the hope of ever establishing a reputation for his manufactures, because experience has proven over and over again during the last 50 years that the jobber will go to no trouble in this direction.

SOME ANCIENT HISTORY.

I have before me resolutions passed by the jobbing Hardware trade of New York City at a meeting held on February 15, 1856, reading as follows:

Resolved, That in ordering goods from the manufacturers of American Hardware we will as far as practicable have the name and residence of the manufacturers left off both from the articles and labels, or if it be desirable to have the maker's name thereon that we will in all cases request that the maker's residence be left off both from the article and the label.

Resolved, That we will give our patronage in preference to such persons or manufacturers as favor our views and who decline or discontinue with the regular course of trade.

The above resolutions were signed by 47 Hardware jobbers of New York City, who then substantially embraced the large jobbing Hardware trade of the States.

This was the initial movement toward effacing the Hardware manufacturers, and there are very many today who are

ENTIRELY UNKNOWN

except to the jobbers for whom they work. But the jobber ought not to be too much criticised for wanting his goods so made as to avoid as much as possible the cut throat competition that follows handling the same brands. In fact, this keen competition is responsible for the special brand business, and it seems to me that there is only one way out of the difficulty for the manufacturer who decides to sell his own brands only.

WHAT MANUFACTURERS MUST DO.

He must in his own way create a demand for his goods and so force the jobbers to purchase or lose trade. The jobbers can and will always find plenty of manufacturers who are willing to obtain their trade by catering to their demands, so that the manufacturers who want to stick to their own brands will have no permanent success with jobbers except in the way noted above. To the manufacturer who wants to market his own brands it is a grave question if the much despised catalogue houses will not prove the best medium to get before the consumer his brand and quality.

A. H. S.

Miller & Brown, Elba, Neb., have been succeeded by F. W. Brown.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

HARRINGTON CUTLERY COMPANY, Southbridge, Mass.; A series of postal cards and circulars referring to its line of high grade Cutlery, including Shoe Knives, Rubber Knives, Butcher Knives, Putty Knives, Meat, Bread and Broom Knives, Paper Hangers' Knives, Banana Knives, &c., which the company has been making for many years.

DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y.: Memorandum book, which in addition to blank leaves contains much useful information.

The NEW YORK STEEL CORNER PLATE COMPANY, 1135 Broadway, New York: Circular illustrating the Parker Steel Corner Plate for the protection of plastered corners.

The FRANK MILLER COMPANY, 349-351 West 26th street, New York: Price-list and illustrated catalogue of Harness Dressing, Oil and Soap, Axle Oil, Shoe Polish, &c.

STEWART & ROMAINE MFG. COMPANY, 124 North Sixth street, Philadelphia, Pa.: Catalogue No. 25, relating to Single and Double Expansion and Toggle Bolts, Star Drills, Cap and Bonnet Nuts, Special Brass and Iron Bolts of all kinds, &c.

LITTLEFORD BROS., Cincinnati, Ohio: Illustrated circular showing sheet steel and iron specialties, including Dump Cars, Hoisting Tubs, Buckets, Cement Pans, Tar Kettles, Smelters' Ladles, Lead Furnaces, Oil and Water Tanks, Powder Magazines, &c.

WILCOX MFG. COMPANY, Aurora, Ill.: Striking mailing card illustrating and describing the Wilcox-Gibbs Wire Hanger Machine.

ANTHONY FENCE COMPANY, Tecumseh, Mich.: Folder referring to Anthony Woven Wire Fence, illustrating its distinctive features and giving the sizes, meshes, &c., in which it is made.

H. C. TACK COMPANY, Cleveland, Ohio: Catalogue illustrated in colors with price-list covering a complete line of Tacks and small Nails.

FORD AUGER BIT COMPANY, Holyoke, Mass.: Price-list on Auger and Car Bits dated July, 1905.

ARCADE MFG. COMPANY, Freeport, Ill.: Catalogue No. 15, showing line of Coffee Mills, Mops and Household Novelties.

GEUDER & PAESCHKE MFG. COMPANY, Milwaukee, Wis.: Circular illustrating the Cream City Foot Tubs and Infants' Bathtubs and Enameled Steel Spittoons.

W. C. HELLER & Co., Montclair, N. J.: Booklet and price-list on Pulls and Card Clips for Shelf Boxes, Cabinets, &c.

KILBOURNE MFG. COMPANY, Troy, N. Y.: Catalogue and price-list of Strainers and Wire Specialties; also circular entitled "A Long Distance Telephone Call."

TAINTOR MFG. COMPANY, 113 Chambers street, New York, is distributing among the trade practical suggestions regarding the filing and setting of Hand Saws, touching among other matters on the comparative relations of bevel and pitch of the teeth, the difference between the formation of Cross Cut and Rip Saw teeth, &c. Specific directions are given as to the angle at which files should be held when filing to produce certain results, the advisability of filing a Saw toward the point or heel, &c. The importance of setting a Saw correctly to obtain the best results in soft and hard woods is also enlarged upon, and other useful information given which will be appreciated by practical carpenters.

RESTRICTED PRICES.

IN our last issue we presented extracts from a number of letters from jobbing houses in which reference was made to the matter of restricted prices on some Hardware lines. Another budget of opinions is given below:

Jobbing Trade Generally Favorable.

To the Editor: We are of the opinion that the jobbing trade generally are in favor of these restricted prices by manufacturers. These prices are so computed that they do not savor of "trust" prices, but are reasonable, and assure the jobber of a small profit above the expenses of doing business. There are a very few of the largest Western jobbers who regard this arrangement unfavorably, simply because it is inimical to their interests and restricts their operations to their immediate or tributary territory. It is one of several reasons why one house has established branches in locations where trade can be reached in no other way. We will not enumerate the classes of goods on which it would be desirable to apply these restricted prices. At present the line is limited, but appearances would indicate an extension of the system by manufacturers.

Must First Repeal Existing Laws.

To the Editor: There are a number of features to this question that seem to be lost sight of, one of the most important of which is the fact that in a number of States, increasing every year, such arrangements are outlawed and most of them are forbidden by the national laws, with severe penalties. Under these circumstances it would seem to us that the first thing to discuss would be whether the temper of the country is such as to hold out a prospect for the repeal of this class of laws, rather than the advantage or disadvantage of breaking them.

Jobbers Need to Be Protected from Each Other.

To the Editor: We believe the jobbing trade generally, possibly the few large houses excepted, favor restricted prices. All classes of unprofitable staple goods should be included, such as Poultry Netting, Wire Cloth, Axes, Nails, Wire, high grade Files, &c. It seems to us that the strife is becoming too fierce to continue unrestricted. It has been one of our theories that the jobbers need protection from each other just as much as they do from the manufacturer.

Suggests a Trial.

To the Editor: We think that all goods controlled as to selling price to the jobber should have a restricted selling price maintained by the manufacturer. We think a trial could be very profitably made on Wire, Wire Nails, Barb Wire and Wire Fencing.

Manufacturers' Interest in Their Goods.

To the Editor: The jobbing trade has been so educated within the last few years that their decided preference will be to have restricted prices at which goods should be sold to the retail trade. It is possible that there are some jobbers who would prefer not to have a restricted price, believing that an open market will permit them to name prices in territory not strictly their own that will secure business, but the great majority of jobbers, knowing that a new condition of affairs exists and that owing to the means of communication many questions have been solved in a manner that brings about a condition of business that is different from that which existed a few years ago, realize that restricted prices are the most healthful for all conditions of trade.

Our views have been that the manufacturers have an interest in their goods until such time as they reach the hands of the consumer, and therefore it is not only their privilege, but it seems as if it is becoming imperative, that they must control prices until they reach the hands of the consumer. In their mad efforts for the increase of business salesmen, even of the best regulated houses, have cut prices until the goods cease to be profitable, and then it is but a short time until these unprofitable goods are sold only in cases of extreme necessity, and thus you see one of the causes that have brought about the necessity of jobbers having private brands, because this is one article on which they can control the price.

In regard to the classes of goods to which this principle should be applied we would include all staples and all classes of goods that the manufacturers desire to have permanently and continuously on the market, thus insuring the good will and active co-operation of the job-

ber because of his assured returns for his effort, as well as the indorsement of the retailer because of the realization of satisfactory returns from his investment and labor.

Would Prevent Salesmen Giving Rebates.

To the Editor: As a general thing we would favor restricted prices. The margins in general lines of Hardware are so very small any way that unless some restriction is placed the average traveling man will persist in giving little rebates from time to time until the cut price becomes the established price. Where the manufacturers restrict the prices in the proper way pretty generally they are obtained by the jobber.

The classes of goods that we would like to see restricted especially are: Builders' Hardware, Steel Goods, Shovels and Spades, Auger Bits, Tinware, Enameled Ware. There are besides several other items that could be so arranged.

Most Important Items Now Covered.

To the Editor: While we are in favor of having restricted prices on certain lines, we would not be in favor of having them apply to a very large extent. The goods now governed by this rule cover the most important items.

Would Be Advantageous to Small Jobbers.

To the Editor: There is no doubt a great benefit in having restricted prices. It means a paying profit for everybody. Several lines that are to-day being sold on a basis of prices established by the factories are paying a far better profit and are more satisfactory to handle than ever before the restricted prices went into effect.

There is, perhaps, one objection that many jobbers would find and that is that it puts the small local jobber throughout the country in a position to make the same prices on goods that the large jobber makes who is located further away from the customer. As a result it puts the close-by jobber in a position to get the business.

It would be hard to say just what goods should come under the restricted prices. We would say any goods that can be strictly controlled by the manufacturers—that is, any lines where there are not too many manufacturers making the goods, and such goods as require considerable expense and machinery in the manufacture, so that a new plant cannot start up on too short notice.

We find some of the most satisfactory goods we are handling are such goods as are sold at restricted prices.

Nobody Benefited by Cut Prices.

To the Editor: We do not favor restricted prices except on goods where the market is or has been badly demoralized. There have been articles where the profit was cut down to nothing, due to the anxiety of certain jobbers to sell, and which condition was improved by restricting the price. Remember that a low price to the retail dealer does not mean a larger profit to him, nor a larger sale. For the benefit of jobbers and retailers, too, restricted prices on such lines as are cut badly is the cure.

Lines That Might Be Easily Controlled.

To the Editor: So far as we are concerned we prefer that only such items as are unprofitable by reason of sharp competition be placed on this basis. We think that in making this statement we voice the sentiment of the jobbers generally. The principal items which at the present time we would like to see placed on this basis are as follows: Horseshoes, Poultry Netting, Scale Beams, Steel Goods, Wire Cloth, Sheet Iron, Wire and Nails. The first four items could be easily controlled as to the resale, as there are only a few manufacturers making each line.

Jobber's Operating Expense Should Be Considered.

To the Editor: We think the restricted price idea is a good one, but the greatest objection we have had to the working of the principle so far as it has been practiced by the manufacturers is that when they fix a price for the jobbers to sell at they do so without due regard to the percentage of expense of conducting a wholesale Hardware business, and therefore allow the jobber too small a profit.

The class of goods to which it would be practical and desirable to apply this principle would be such goods as Ice Cream Freezers, Poultry Netting, Screen Wire Cloth, factory brands of Axes, Horseshoes, Ammunition, staple sellers in Hames, Files and many other staple articles which are sold at less profit than the percentage of expense of doing business.

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CHICAGO HARDWARE ASSOCIATION PICNIC.

IDEAL weather and a record breaking attendance of 1000 persons contributed to the success of the eleventh annual picnic of the Chicago Hardware Association. The picnic was held at Alton Park, on the Chicago & Alton Railway. There were many features of interest in the picnic, including the following contests, the winners of which are also named:

Target Shooting Contest for Members: Five prizes in order named: Chas. A. Dalstrom, J. N. Bartholdy, Frank F. Porter, A. J. Englehardt and J. H. Powers.

Open Target Shooting: First prize won by M. Foslin.

Bowling Match for Members: First prize, C. A. Nielsen; second, John F. Armbruster; third, Henry Stuckart; fourth, Geo. A. Englehardt; fifth, H. E. Gnad; sixth, Martin Englehardt.

Bowling Match, Open Game: Six prizes, first of which was won by F. A. Hartman.

Bowling Match for Women: First prize won by Mrs. R. H. Miller.

Tug of War: North side of Lake street vs. south side. The south side won the prizes. The winning team consisted of Messrs. Sachtleben, Englehardt, Gormley, Schubert, Koehler, Dasso and Peterson, the last named being anchor.

Baseball Game: Two teams were made up from players on the grounds and a spirited game was played, each member of the winning team being given a pocket-knife by the Prize Committee.

Salesmen's Race: Fifty-yard dash; four prizes, won in the following order: F. H. Suter, George Wolf, F. M. Denoyer and E. Belfuss.

Fifty-yard Dash for Members: Seven prizes, awarded in the order named: H. E. Cluttenham, L. A. Kruger, J. Bartholdy, Grant W. Porter, J. H. Powers, Fred. Rubling and Martin Englehardt.

Other contests included 25-yard dashes for boys and girls and 50-yard dashes for the wives of members, non-members' wives and "young ladies."

There was also a coupon drawing contest, each admission to the grounds being on the basis of a numbered ticket with a coupon, the coupons being entered in the drawing. There were 17 prizes awarded in this drawing.

The judges of athletic contests actually taking part consisted of W. H. Bennett, chairman; George W. Trout, represented by Mr. Ingledew; E. C. Belknap and R. R. Shuman. D. W. Simpson, appointed a judge, delegated his task to other members of the committee, as did also other busy men appointed to take charge of this work.

The credit for the success of the picnic is divided among so many members of the Chicago Retail Hardware Association that it is difficult to name specific instances, but upon the shoulders of G. R. Lott, secretary of the association; H. E. Gnad, president, and W. H. Bennett, chairman of the Prize Committee, devolved much of the active labors on the grounds, while on A. J. Englehardt, chairman, and Fred. Rubling, secretary of the Arrangements Committee, and Alderman J. L. Smith, chairman of the Transportation Committee, fell much of the preliminary labors which so greatly contributed to the success of the day.

BERNARD N. FARREN, who built the system of hydraulic power at Turners Falls, Mass., and who was influential in causing the establishment of the John Russell Cutlery Company of that town, has retired from the Board of Directors of the company and also from the Board of Directors of the Turners Falls Company, which operates the power system. Mr. Farren took the contract for building the dam and its canal and from this beginning has been active ever since in building up not only the Cutlery Company, but other important industries at Turners Falls. The John Russell Cutlery Company at its annual meeting elected these officers: President, Charles E. Stevens; treasurer, W. P. Dustin; assistant treasurer, E. P. Hitchcock; clerk, Frederick Clapp; directors, Charles E. Stevens, Charles T. Crocker, D. C. G. Field, W. P. Dustin and Jonathan Bulkley.

MERIT N. WOODRUFF, for 29 years president of the Atwater Mfg. Company, Southington, Conn., manufacturer of Carriage Forgings, has declined re-election as president on account of his age. James H. Pratt, a director of the company, has been elected to fill the vacancy.

OKLAHOMA AND INDIAN TERRITORY HARDWARE AND IMPLEMENT ASSOCIATION.

THE second annual meeting of the Oklahoma and Indian Territory Hardware and Implement Association was held in Oklahoma City on the 11th and 12th inst. There was a large and representative attendance of merchants, and the convention was a marked success in a business way as well as socially. The meeting was held in the Chamber of Commerce Building.

In calling the convention to order, President A. L. Severance of Durant, I. T., gave a brief review of the history of the Indian Territory Association, which had held four annual meetings prior to the organization of the joint association for the twin Territories. Mr. Severance also paid a tribute to the late E. C. Stretch, his predecessor as president, who died in Toronto, Ont., on the 27th ult.

The visiting merchants were welcomed to Oklahoma City by T. C. Ham, who made a felicitous address, in the course of which he expressed the conviction that before another convention had been held the two Territories would be consolidated into the State of Oklahoma. The address in response on behalf of the association was made by Fred. Parkinson of Wagoner, I. T., whose facetious remarks were very much enjoyed.

Secretary's Report.

The annual report of Secretary J. H. Johnston of Oklahoma City was in part as follows:

At the last annual meeting we had 48 members in good standing. Since then we have received seven new members, making a total at the present time of 55.

There have been no kicks or complaints filed this year. In preparing this programme I tried to arrange it to suit the time at our disposal and hope that it may meet with your approval. It was not my aim to tire you with addresses, but rather to give you a few choice ones and leave the balance of the time for use in a general discussion of topics which seem to us of most importance.

PARCELS POST.

I desire to call your attention to a scheme gotten up by a manufacturers' association for 1-cent postage, which on its face looks good, but which I believe is only a forerunner of the parcels post, and I would urge that if any of you receive any of the chain letters used you investigate the matter thoroughly before making any attempt to have your Congressman favor this bill. The advocates of the Parcels Post bill are very active at the present time and are planning to have this bill passed at the next session of Congress. I therefore hope that if it is deemed necessary for you to write a personal letter to your Congressman and you are so requested you will not fail to comply at once.

NATIONAL ASSOCIATION.

If you will pardon me here, I wish to say a few words in regard to the Minneapolis national convention. The one thing which impressed me above everything else was that the men who are at the head of our National Association are men in whom we can put our trust. They are broad gauged, large minded business men of the highest type and men who when they are called upon by jobbers and manufacturers to show their side of any question are capable of doing it. Over 600 manufacturers have given their word that they will not sell to catalogue houses and others promise to sell only on restricted prices, but there are others, and you and I must stand solidly back of these men until they are all in the fold. Another thing which impressed me was the absolute harmony which existed. I trust that the same good feeling will exist here. In conclusion I wish to suggest to you a few things which in my opinion ought to be attended to:

CHANGE OF NAME AND MUTUAL INSURANCE.

First. Change the name of the association to read Oklahoma and Indian Territory Hardware and Implement Association.

Second. If a sufficient membership can be formed at this time, the question of forming a mutual insurance company within the next year should be taken up.

Third. That we tender a vote of thanks to Mr. Norvell for having compiled and furnished a list of the Hardware and Implement dealers, at considerable expense and trouble.

How to Meet Catalogue House Competition.

S. Norvell of the Norvell-Shapleigh Hardware Company, St. Louis, Mo., addressed the convention at some

length on the subject of "How to Meet Catalogue House Competition." Mr. Norvell stated that he had given a great deal of time and study to the catalogue house question and that he had within the past few months attended 13 conventions, traveled 10,000 miles, written 4000 personal letters and several pamphlets. He said that there never had been an issue in the Hardware conventions that had excited so much discussion. There was not a jobber of any consequence in the Hardware trade but had promised not to sell goods to catalogue houses, and he was of the opinion that the jobbers had kept faith with the retailers in this matter.

"We do not expect to drive the catalogue houses out of business," said Mr. Norvell, "although we would like to do so, but we do hope to check them. The manufacturers have a good many cobwebs in their minds which we are trying to get out. Some of the manufacturers are selling catalogue houses as low as they do jobbers. At a meeting in New York the manufacturers said that 95 per cent. of their business came through jobbers and retailers. We asked them then if they were not willing to give up the 5 per cent. for the benefit of those who purchased the 95 per cent."

Mr. Norvell said that they had found 600 manufacturers who promised not to sell goods to catalogue houses, but that the catalogue houses were getting the goods, and he stated that they were buying goods through retail dealers in many instances. Within a certain time his house had turned down 11 orders from retail dealers that were ordered by dealers to be furnished to catalogue houses.

"The main problem with retail dealers and jobbers is the question of selling goods," said Mr. Norvell. "The jobbers and manufacturers have to sell goods and so do the retailers." He gave it as his opinion that the reason so many merchants, outside of the Hardware dealers, including grocers and dry goods merchants, are selling Hardware is because the Hardware dealers have not kept a full and complete line of goods."

SELL GOODS, THE CURE.

As to the cure for the catalogue house problem Mr. Norvell said: "Sell goods! When you get up against a catalogue house order take the order at the catalogue house prices and send it to your jobber, and when you remit for it deduct 20 per cent. from the prices quoted in the catalogue house. catalogue. This will cause a "kick" from the jobbers, perhaps, but if dealers all over the country do this, then the jobbers will take it up with the manufacturers and bring sufficient pressure to bear on them not to sell goods to catalogue houses. Meet the catalogue house competition, even if you lose business. Make it up in the average."

He said that the salvation of the retail Hardware business is in the clerks, and suggested that every dealer who was trying to run his business by himself should get a clerk and teach him to sell goods, and that the proprietor should get out and do more rustling for business.

INTEREST AND ENERGY.

F. J. Gould, representing Blish, Mize & Stillman, Atchison, Kan., made a short address, in which he said that he believed that one trouble with the retail trade was that the average retail dealer did not take enough interest in association work and in the catalogue house question. He said that in some places dealers were taking the matter up in a vigorous way, and that dealers in all lines were joining together and refusing to give credit to or buy produce from the regular customer of catalogue houses. He thought the jobbing houses should instruct their salesmen to talk on this subject and association work to the dealers.

Mr. Norvell stated that he had written a pamphlet at the request of the jobbers for the purpose of instructing salesmen along these lines.

President Severance asked Mr. Norvell how the dealers were to meet the competition in prices on Steel Ranges, and it was suggested that he buy a catalogue house Range and place it on his floor for comparison.

HOW MR. SPANGLER DOES IT.

F. M. Spangler of Mulhall, O. T., told how he had secured the sale of a Steel Range to a farmer who had made up his mind to buy from a catalogue house by showing him the superiority of his goods over those of the catalogue house and making a price that was better than the catalogue house price, quality of the goods considered. He told of doing the same thing in the case of a customer for a Gas Engine and Feed Grinder, the customer having his order already made out and his mind made up to send to a catalogue house for the goods. He also said that he encouraged the idea of buying from home dealers by doing the same thing himself when buying dry goods, groceries, clothing, &c. He made quite a hit by adding that a merchant whom he had bought his dry goods from and who wanted to make a nice present to an old friend of his who was celebrating his golden wedding sent away for a Buggy and when it arrived he found it to be a — Buggy. He stated that he had a — Buggy on his floor at the time and he decided to give it away on a certain day by means of a drawing, giving every man, woman or child a chance who came in and registered their name with him. He stated that the Buggy went to a poor woman who needed it badly and that closed out his stock of — Buggies.

STIMULATING BUSINESS IN WIND MILLS.

W. D. Close, Homestead, O. T., suggested that if Steel Ranges could be made so complicated that the ordinary man could not set them up without help it would settle the question of selling Ranges through the catalogue houses. He illustrated this point by stating that one of his customers recently bought a Wind Mill from a catalogue house and was unable to set it up, and came to his store and asked his men to go out and set up the mill for him. He refused to comply with his request unless the farmer would pay him \$5 for his services, which the farmer refused to do; and he said the mill still lies in a knocked down condition, and that by reason of this incident he has sold two mills in the same locality to parties who expected to purchase them from the catalogue house if their neighbor's worked all right.

Freight Rates.

J. H. Johnston, secretary of the Oklahoma City Traffic Association, spoke of the work of the association in its efforts to benefit the people of Oklahoma City in the matter of securing just and equitable freight rates. He favored "legalized pooling," under certain conditions, as being best for the people and he also favored an appointive commission for State and interstate railroad commissioners. He took up the question of jobbing rates in Oklahoma and Indian Territory, and stated that they now have a nearly uniform rate for outbound shipments, and that an effort is being made to get a rate on Agricultural Implements which would make Oklahoma City as good a point for distributing as Dallas, Wichita and other jobbing points. It was his opinion that the association would be able to get still further concessions.

The National Federation.

T. G. Wiles, president of the National Federation, called attention to matters that the federation had accomplished for the benefit of members of the various associations, among which was the defeating of the proposed change of rate on less than carload shipments of Vehicles, which would have benefited the catalogue houses without helping the dealers, except in a few cases of local shipments. He also cited the securing of an order from the Trans-Missouri Freight Bureau allowing Vehicles, Implements and Wind Mills to be loaded in the same car and taking Implement rates. He told of the uniform constitution adopted by the federation for all of the constituent associations, and stated that the Executive Committee of the federation would in a short time be incorporated as the Implement Dealers' Bureau of Information, through which sufficient pressure could be brought to bear on jobbers and manufacturers who persisted in selling goods at retail, or in other ways vio-

lating trade ethics. He discussed the matter of local clubs and urged their organization, stating that the federation had prepared membership application blanks and other supplies, which could be obtained without cost by applying to Secretary Hodge at Abilene, Kan. He emphasized the importance of every dealer doing his part to help along the work of the association and urged the careful reading of the trade papers by the dealers.

Colonel Staver's Address.

Col. H. C. Staver of the Staver Carriage Company, Chicago, addressed the association at length, touching on the resources of Oklahoma, the matter of credits and keeping books, the need of care in placing specifications, warranties, the check on the home bank abuse, &c. In concluding, referring to the responsibilities and demands of the future, he said:

The business methods of yesterday are being outgrown, and as the individual tries to keep pace with the great combinations of brain and capital on all sides he realizes that the situation demands progressive thought and determined effort. Yet the chances and opportunities for the individual were never greater, never better, than now. We need only to realize what they are, rouse our energies and determination to their utmost, and go after them like men. We must not only take care of our own increase in population, but we must provide for and assimilate an immense immigration. Competition will grow stronger and business must be done on still closer margins as these conditions develop with increasing intensity in the coming years. In a greater degree than ever before this century will witness the survival of the fittest. Looking into these possibilities of the future we shall be best equipped for the conflict if we meet them with a cheerful confidence, born of the successes we have already achieved as a people, and that serene optimism which believes that "the best is yet to be."

Who is to Blame for the Unprofitable Prices on Staple Goods?

An interesting paper on this subject was presented by S. H. Brown of the Oklahoma City Hardware Company, Oklahoma City, as follows:

The question is not an easy one. It is a subject of great interest to retailers, jobbers and manufacturers. There is trouble all around; there is trouble from the manufacturer when, because of a shortage of capital or a surplus of goods, he slaughters prices on staple articles in order to diminish his stock and increase his cash.

There is trouble caused by the manufacturers who adopt the policy of selling the smaller buyers or retailers. They do not as a rule obtain the proper differential as between the jobber and the retailer, and this tends to reduce prices made by their brother manufacturers when selling the legitimate jobbing trade.

There is not only trouble but grief caused by the manufacturers who sell catalogue or mail order houses. For years the catalogue houses have been educating the consumer to believe the retail Hardware merchant to be a robber and that there is no excuse for the existence of the jobber on the earth. The large mail order houses buy of the manufacturers at practically the same price as the jobbers. They sell consumers, thus absorbing all of the profits of both jobbers and retailers. The catalogue houses in selling consumers compete with retailers. They are therefore nothing but retail dealers and the manufacturers should classify them as such, because all of the mail order houses combined do not sell over 5 per cent. of the Hardware consumed in the United States; 95 per cent. is distributed through the retail trade. The great harm of the catalogue houses is not so much in the amount they sell as in the demoralization of prices.

SELLING WHOLESALE GROCERS.

The Hardware manufacturers who sell the wholesale grocer bring harm likewise; not so much in the amount they sell, as in the demoralization of prices. They induce the retail grocers to add their little assortment of Hardware, which becomes a thorn in the flesh of the retail Hardwaremen, for the retail grocer, like the grocery jobber, is of the opinion that Granite Ware should be sold on the same percentage of profit as sugar.

JOBBER USING STAPLES FOR LEADERS.

There is trouble with the jobber when he uses staples for leaders, which thing he is particularly apt to do when he goes into territory so far removed from his base of action as to make it difficult for him to secure a satisfactory volume of business on an even basis with resident competition. In order to increase his turnover he cuts the price on staple lines because they sell freely and in good quantities and endeavors to save himself in other ways, reasoning that any profit above invoice and freight cost is better than not to have made the sale, thinking that the said profit would reduce the expense account—false reasoning and most demoralizing in its general effects. If the cost of such transactions were added to the invoice and freight cost, such business would show a loss; besides it has set a precedent. How easy to repeat such sales. He thus becomes not only responsible for the unsatisfactory profits but his own enemy and competitor.

LAXITY IN HANDLING CARLOAD LOTS.

The jobber is guilty in that he attempts to make up collective cars of wire cloth or poultry netting. Failing to capture orders enough to complete the car he ships the full car and takes his chances on disposing of the unsold portion. The traveling man who must look after the distribution of the same is in a great rush to close out, for demurrage or storage is staring him in the face and he is very anxious to get into another section to close up another like transaction; so he calls upon Mr. A, saying, "I don't sell Mr. Jones across the street, because he is such a cutter and mean competitor of yours. Now I will close this lot of goods to you at our actual cost, plus the actual card rate of freight. I just want to put you in position to knock the tar out of that fellow Jones right from the jump."

Mr. A says, "I would like to do that, but you have more than I could possibly sell, and inasmuch as I could not pay cash for it I will pass it up."

"Oh!" says Mr. Traveling Man, "you can't afford to pass such an opportunity to do that fool Jones, and just to help you I will date the bill three months ahead and give you 60 days."

CUTTING CERTAIN LINES FOR ADVERTISING PURPOSES.

Then comes another jobber with the brilliant thought that he will sell certain goods as leaders in order to make the impression that he is the cheapest and best house to buy from, and after that he will even up by selling a lot of goods at a big profit and with them will work off his old dead stock; but about the time he gets steam up he finds that there are other jobbers as big fools as he is, one of whom is making a drive on the very thing he expected to even up with.

MAKING WAR ON SMALL COMPETITORS.

Then, too, the big jobber in his efforts to inject enthusiasm into his travelers, who have constantly complained of the prices made by smaller rivals, underestimates the ability of these smaller rivals to buy at prices that would enable them to compete with him. He offers certain lines at about what he thinks the smaller rival has to pay for them. The smaller rival being a sharp, shrewd buyer, gets the goods as low as the big fellow and determines not to be undersold, resulting in a war in prices. Other lines are involved and speedily both are selling at cost and losing the amount that it costs to conduct business.

LICENSE TO TRAVELING MEN.

The jobbers are responsible for unprofitable prices on staple goods, because many of them allow their traveling men to make their prices. Weak salesmen welcome gladly the excuse to cut prices. Traveling men will cut their own prices to get an order. A salesman never will. The jobber is guilty because he has not the backbone to make his own prices and force the traveling salesman to sell accordingly regardless of what others may do.

COST OF DOING BUSINESS.

Many jobbers are responsible for this deplorable condition because they fail to look squarely in the face of what it really, actually, costs to do business; for if same was added to the invoice and freight cost on each and

every article it would prove a long needed eye-opener. The manufacturer should include in his cost the expense of marketing the product as well as the office and factory expense. It is the correct and safe way to conduct business. Yet how many do it?

The common practice of using leaders is objectionable because it gets the same articles into too many stores and tends to price cutting among the retail dealers themselves. The retail dealer is just as well off when he pays a legitimate price as he is when he buys at a cut price, because when he does the latter the temptation is too great to hold the price where it should be. Price cutting begets price cutting and the only way to hold an established price is to hold it.

TRAVELING MEN A SOURCE OF TROUBLE.

The jobber's traveling man is responsible for unprofitable prices. He will wait until his wide awake rival has sold practically all of the seasonable goods and then he shakes himself and finds that he has been left out. Merchants all tell him they have bought. He then resorts to telling Mr. Merchant that he bought too soon and that if he had waited for him he would have saved him 5, 10 or 15 per cent. The traveler reports that while he did not sell any of the goods he everlastingly salivated the fellow that did, and these merchants report the prices he quoted and demand that they be met, which is done for the sake of peace and the hope of future business, resulting in an unprofitable price on one hand and the sleepy traveler's house carrying the goods over for next season, while Mr. Sleepy Salesman promises that he will do the business next year and the other fellow lets him. After having done so he forces the same sort of settlement that prevailed in that territory the previous season.

HIGH FREIGHT RATES.

The excessively high freight rates into this territory are also a very serious cause of unsatisfactory profits. Did you know that the local freight on strap hinges from the factory to this territory is 100 per cent.?

The fact that credit is too cheap is a cause for unprofitable prices to an alarming extent. In this great commercial age credit is an important factor. Credit has its moral side as well as its material side and the very basis of commerce is credit.

CREDIT IS FOUNDED UPON COMMERCIAL HONOR.

Just as long as credit risks are endangered by incompetence or by inexperience, by indiscretion or by extravagance, by neglect or by ignorance, by weak morals or by downright dishonesty, either within or without our ranks, either among debtors or creditors, or both, just so long will unprofitable prices exist. A more rigid and higher estimate in this department of work would stand for the greatest good to every honest man and for just retribution to every dishonest man. What helps general conditions helps every individual merchant. Nothing is so destructive to the whole fabric as cheap credit and nothing so conducive to cheap prices as haphazard credit methods. It admits the dishonest, inexperienced, and gives a credit purchasing power of which they are unworthy and results in price cutting, bankruptcy, wreck, loss and ruin generally.

RETAILERS ARE LARGELY RESPONSIBLE

for unprofitable prices. Now don't go to protesting that you do not cut prices. You know you do in many instances, and those you do not know of your salesmen do. The main reason comes from the fact that there are enough in the retail ranks who are not of the best order of business talent to affect the whole to the extent that unprofitable prices on staple goods is the result. The intelligent retailer is dissatisfied with the profit on such goods and naturally searches the country over to buy this article for less, and after vigorous effort he finds a weak jobber who meets his wishes for a lower price. This creates new grief in jobbing circles and then the jobbers tell their troubles to the manufacturers, and thus we have the endless chain caused by the foolish and hurtful tactics employed in the first instance by the retailer whose brains lay chiefly below his belly band, the man who failed to count the cost of conducting business,

such as rent, taxes, insurance, donations, salaries to bookkeepers, stenographers, delivery teams, &c.

I have outlined the enemies who are responsible for the unsatisfactory profits on staple goods. You will please fill in the blanks.

NOW FOR THE REMEDY.

The blame cannot be laid at the door of either the manufacturer, the jobber or the retailer, as a class, but members of each class as individuals have been guilty. Neither of the classes can justly be held strictly accountable for the unfortunate condition, and only by the concerted action of all three will it be possible to eliminate an abuse which affects unfortunately and disastrously not only the lines upon which prices are slaughtered but other lines as well, for the manufacturer, the jobber and the retailer must all make a margin of profit if they are to continue in trade. If upon a large percentage of goods the profits are much reduced the percentage upon other lines must be increased to make it up.

HEARSAY.

Too much dependence is placed upon hearsay. You hear that your competitors are offering such and such goods at such and such prices, and without investigating the truth of the statement or insinuation you immediately reduce, thinking that you are meeting the competitors' prices, when it is too often true that you yourself are making a new low record and establishing a precedent. Is it not possible that all of us think our customer is better posted than he really is?

THE PRICE OF SUCCESS

in this age of the retail world is eternal vigilance and concentrated intelligent effort. He who is not prepared to pay this price should seek some other calling and thus save himself from the inevitable loss and humiliation that come with failure. No retailer can succeed without a system of accounting which will tell him monthly, weekly, or even daily his assets and liabilities, his bills receivable and payable. Without it he is liable to overtrade and find himself unable to meet his bills. Thus he not only cripples his credit, but he is forced to price cutting in order to get the needed cash. There is no such thing as luck. Those who work in harmony with the general laws of success will win success; those who violate many of them will pay the penalty in failure. A hair may divide the false from the true, and a very small margin often divides success from failure. The chain is no stronger than the weakest link in it.

DO NOT OVERBUY.

It is much easier to replenish than to unload your overpurchases. Profits that are shown from year to year in an increase of dead stock are not a safe increase. Profits in cash do not become shop worn, do not depreciate and are always in style. Don't increase stock and expense too rapidly; grow as nature makes things grow. A forced growth is never a healthy growth. Do not employ any one who does not mix brains with his work. With these principles followed the figures will be reversed—95 per cent. will succeed in place of 95 per cent. fail.

A retailer should be a teacher as well as a buyer and seller to a degree that he can educate his assistants.

KNOWING THE GOODS THOROUGHLY

is next in importance for the salesman to his demeanor toward the customers. Everything now is electric or dynamic or it is nothing at all. First, the salesman must be honest; he must know men at sight and the value of things he wishes to sell. There are so many sham things which as a rule can only be sold to sham men. He must have grace, grit and gumption, knowing how to talk, what to talk about and especially when to stop talking. Give the clerk the price, with instructions that it must not be deviated from, that it will be useless for him to come or send customers to you to get the privilege of a lower price. By so doing you give the salesman confidence and in turn he will hold the confidence of the customers. How humiliating to a bright, ambitious clerk, after telling his customer frankly that he has named the price, the only price, to see the same customer hunt up

the proprietor or boss and get from him, dead easy, simply for the asking, a much lower price! That clerk rightfully concludes that there are no further restricted prices on anything in the store and that no man, not excepting the proprietor, can sell cheaper than he can. By such an act, Mr. Merchant, you have murdered a salesman, and he becomes simply a waiter, allowing the consumer to dictate the price. Without full confidence there can be no candor, no conviction and no enthusiasm. The customer quickly discovers that there is "something rotten in Denmark."

A KNOWLEDGE OF AND ACQUAINTANCE WITH COMPETITORS will undoubtedly prove of great benefit to all. If it accomplishes nothing else but the elimination of false reports in the trade it fulfills a very important mission. I believe that the work of the various associations in bringing together Hardware manufacturers, wholesale and retail merchants, will stand as a vast power for the correction of this as well as other evils.

RESTRICTED SELLING PRICES

made by the manufacturers for both the jobber and the retailer have stood the test successfully for 20 years past on a certain line of hand saws. Why could not the same method be carried into many other lines successfully? The old method of warfare in trade should give way to a more just and enlightened spirit of cooperation. Just as peace commissions will take the place of war councils in governmental relations, so will co-operation conventions take the place of executive sessions for devising ways and means to cut the throats of competitors. This is not the true spirit. It is the co-operation spirit which brings peace and plenty to all.

F. E. Muzzy's Address.

F. E. Muzzy of the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., urged merchants to join the association, as in that way they could help in overcoming the catalogue house competition, in which they were all interested. He also spoke of the benefit of mutual insurance and gave some good advice on the subject of salesmanship, showing that it was the treatment of the customers and the attitude of the salesmen more than the prices that sold goods, and that it was unnecessary to cut prices in order to make sales. He stated that the manufacturers were doing all they could to help the retail dealer in the catalogue house fight, and that they should reciprocate by standing by the manufacturers.

Some Ways to Raise the Standard of Efficiency of Our Clerks.

Harry Mead of Shawnee, O. T., read a paper under the above title, in part, as follows:

A new clerk or one who is just starting to learn the Hardware and Implement business should of course be started at the bottom. But he should have the same watchful care and be shown the same consideration that any of your older employees receive. Teach him to be neat, to keep the stock clean, to have a place for everything and to keep the store clean and in good condition, and above all things show him that his efforts are appreciated and teach him to advance his own ideas and to have an interest in the business and to feel that his part of the machinery is just as important as the manager's or proprietors' themselves. Very few of us pay any attention to the "new man" or beginner, and we may have the making of a spellbinder in the new man and not know it. I am inclined to think that if we will do our part he will soon show what is in him. If he is honest but makes mistakes and is trying to learn the business and shows some improvement, be it ever so little, I think you can afford to try him a little further, to give him another chance. But if he is lazy, lifeless and indifferent, the sooner you dispense with his services the better off you will be, for personally I have no time to spend with the clerk who is lazy, indifferent and disloyal.

ENCOURAGE THE NEW MAN.

Do not be a continual fault finder. Correct his mistakes and reprove him, but do it in a nice way; do not correct unkindly and never reprove him in the presence of other clerks. Pat him on the back and push him ahead all you can when he has a new idea or a good suggestion or has shown any special development. Show him that you are watching his efforts by encouraging

him with a cheerful word and friendly interest in his work.

GIVE EACH CLERK A DEPARTMENT.

or one special end of the business to look after and let him understand that you will look to him and to no one else to see that this end of the work is performed. Place on each one all the responsibility you can; in other words, unload your troubles upon them; let your clerks grow some of the gray hairs and get bald headed through worry instead of reaping all these benefits yourself. Teach your clerks to take care of the details—look to each one for results in his line of work. Get around over your store and consult and advise with them and impress upon their minds the importance of their duties and I feel quite sure that you will soon see an improvement.

SELLING GOODS FOR A PROFIT

should be one of the first things taught a salesman. There are very few salesmen who have any idea of what it costs to run a business, and I am sorry to say that a good many of the proprietors themselves have not as yet learned this end of the business. Few clerks realize what percentage it costs to operate a business, or what volume of business must be done before you can commence to make something for yourself for a rainy day. I believe this is to a great extent our own fault. We should teach our clerks that it takes a good salesman to sell goods for a profit.

TO STAND BY YOUR CLERKS

is another way to improve their efficiency. Show that you are back of them in doing right and that if they make a mistake it is all right. Encourage them just the same when they make an honest mistake as if they had made a good sale. Personally I would rather have a clerk who made mistakes and did something and would use his own judgment than to have one of those "good clerks" who never make a mistake and are always waiting before deciding a proposition to see the proprietor and get his decision. Teach them to go ahead and whatever they do you are going to stand by them. If they should make a mistake and guarantee a washing machine to churn milk, you should get busy and see them through. Do not pout; be cheerful, even if it costs you something and show them you expect them to make their share of mistakes.

PRICE CUTTING BY THE PROPRIETOR

is one of the gravest dangers we have to avoid. We all know what this means, and we have customers who always want to trade with the proprietor because they expect to get a better deal from him, or expect him to make a present of something before they will close a trade. Now we can all be improved upon in this line of our business, and to my mind nothing will so soon cool the ardor or kill the effort and ability of a good salesman as for the proprietor always to be interfering with the salesman and making a special price or special inducements to the customer after the price has been named by the salesman. This is a place where we should stand firmly by our clerks. After they have made a price or made a decision, nine times out of ten we will find it is best for us to stand by them and see them through it, even though we should lose a sale by doing so. I confess that sometimes it takes a little nerve, but if we are not already doing it we had better begin at once, for if from any cause we should be called away from our business we might lose one-half of our customers by having them educated that they might do better by seeing the proprietors.

EARLY CLOSING.

Give your clerks vacations and holidays. Close your store early—you will lose nothing by showing them that you are willing for them to have a part of their life for themselves. If they should lose a day do not deduct it from their salary; give them a vacation—let their salary go on just the same. You will be surprised to find that you will have made money by doing so. In my town we have a clerks' union and I must confess that they have done one good thing and that is to close the stores at 7 p.m., and I believe that they should go a little further and close them at 6. We would do just as much business as to keep open until 9 and 10 o'clock at night.

CLERKS' MEETING.

I have never tried having a clerks' meeting, but I believe this to be a grand idea and think that it would pay us well to spend money for some kind of an entertainment where we could discuss the best interests of our business—how to improve our sales, and the best lines of goods to sell, and discuss and correct any grievances that may arise. We would be doing something at least to improve not only the efficiency of our clerks, but would be benefiting ourselves as well. We should

remember that when we do anything to improve the efficiency of our salesmen and clerks or to raise the standard of efficiency, it will come back to us twofold, for we can spend neither time, money nor efforts on our salesmen that we ourselves will not reap the greatest results.

New Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, W. J. Pettee of Oklahoma City.

FIRST VICE-PRESIDENT, J. N. McNabb, Wewoka, I. T.

SECOND VICE-PRESIDENT, O. A. Smith, Watonga, O. T.

SECRETARY, J. H. Johnston, Oklahoma City.

TREASURER, T. J. Griffith, Oklahoma City.

EXECUTIVE COMMITTEE: A. D. Acers, Norman, O. T.; V. D. Tinklepaugh, El Reno, O. T.; A. L. Severance, Durant, I. T.; S. R. Frazee, Vinita, I. T.; T. J. Griffith, Oklahoma City.

Resolutions.

The following resolutions were reported and adopted:

That the association is highly pleased that all sectional differences which have existed heretofore have been amicably settled.

That it is the sense of the association that the work of forming local organizations should be largely extended. The existence of the catalogue house evils, and the ever increasing movement on the part of manufacturers and jobbers to extend their trade by means of brokers, and by selling to firms in other lines of business, and so not entitled to handle such goods, makes the formation of such organizations imperative for the maintenance of our position as dealers of Hardware, Implements and Vehicle. And we further recommend that a committee of three be appointed to assist in the organization of such associations.

That it is the sense of the association that dealers should be more aggressive in this matter of abuses and inequality on the part of manufacturers and jobbers and that all such should be reported immediately to the secretary, so that action may be taken to secure immediate remedy, either direct or through the Federation. And we deprecate the business methods of certain trusts and combinations—especially certain manufacturers of farm machinery—as being entirely out of harmony with the spirit of our government and detrimental to the interests of the whole people, and to members of our association and their customers in particular. That we indorse the attitude and efforts of the National and State Governments in the attempt to regulate and control the operations and methods of such trusts and combinations.

That we reaffirm the principle that to the retail dealer belongs the retail trade, and that we condemn the disposition on the part of certain jobbers and manufacturers who continue to make occasional sales direct to consumers, in view of the fact that distributing points are being established within the bounds of our territory; and would especially call the attention of jobbers and manufacturers in our lines to the foregoing principle. We recommend that the members of this association throw the weight of their influence and patronage to houses which refrain from selling goods at retail. We construe sales made directly or indirectly through brokers or any third party as direct sales by the manufacturer or jobber furnishing the goods.

We recommend that our secretary give due notice that at our next meeting we will consider the adoption of the uniform constitution and by-laws recommended by the National Federation, and the selection of a more suitable name for our association. We recommend that a strong legislative committee of three be appointed to secure legislation for the protection of our interests and that the necessary expenses of such committee be defrayed by the association.

On account of local conditions existing in our territory we recommend the appointment of a Harvester Committee of three members.

That this convention fully appreciates the work that has been and is being done by the National Federation, and pledges the continued support of our association in its good work for the betterment of trade conditions. That we extend a vote of thanks to all the officers of the association for their efficient work.

That we extend a vote of thanks to the Chamber of Commerce of Oklahoma City for their courtesies and entertainment.

That we extend a vote of thanks to T. G. Wiles, S. Norvell, H. C. Staver, F. E. Muzzy and others for their presence and assistance at our convention.

That we extend a vote of thanks to the trade papers for the attendance of their representatives at our convention and for their assistance during the past year along association lines.

MISCELLANEOUS NOTE.

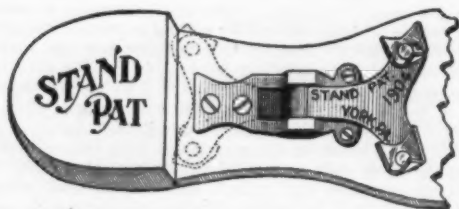
French Window Lock Sets and Glass Door Knobs.

Sargent & Co., New Haven, Conn., and 149-153 Leonard street, New York, are sending to the trade extra pages of a number of new goods, to be pasted in their catalogue. Four pages are given to lock sets for French windows, with both plain and rabbeted fronts. These sets have round knobs on one side and lever handles on the other, a combination not previously produced. They

are all designed for windows $1\frac{1}{2}$ to 2 inches thick, with square and rounded corner plate escutcheons $1 \times 4\frac{1}{2}$, $1 \times 4\frac{1}{4}$ and $1\frac{1}{8} \times 5$ inches. All have nicked steel keys. The lock fronts are both iron and bronze metal, as are the knobs and levers, according to price. On another page are rose and escutcheons for French windows, separate. In the same category is a line of oval glass mortise door knobs in two patterns, pressed and cut. The mountings are bronze metal, with 5-16-inch adjustable spindles, model C. The regular finishes are four in number, including natural finish. The knobs are $2\frac{1}{8} \times 1\frac{1}{4}$ inches and $1\frac{1}{2}$ inches thick.

The Stand Pat Creeper.

The accompanying illustration shows a patent ice creeper which is offered by the McClellan & Gotwalt Company, Limited, York, Pa. This article is made of brass to avoid rusting, with well tempered springs and points of hardened steel. After it is fastened to the

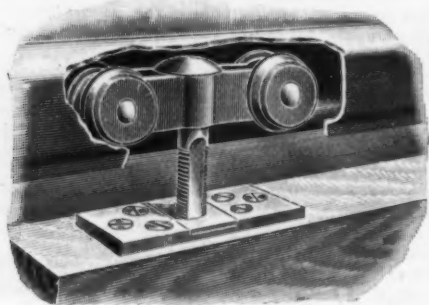


The Stand Pat Creeper.

instep by screws, which are packed with it, the wearer may use it or not at his volition. When in use it takes the position shown by the shaded portion of the cut and at other times—in the house or when the walking is not slippery—it may be closed so as to be protected by the heel, as indicated by the dotted lines.

McCabe Parlor Door Hanger No. 10.

The McCabe Hanger Mfg. Company, 425-427 West Twenty-fifth street, New York, has just added to its line the new house and parlor door hanger shown herewith. This hanger is made on the same lines and embodies the same points of excellence as the company's No. 2 hanger, already on the market, but represents considerable sav-

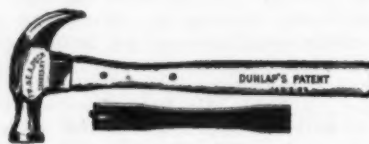


McCabe Parlor Door Hanger No. 10.

ing in expense, as the frame of the carriage is stamped steel instead of a drop forging. It has fiber wheels with ball bearings and all the parts are case hardened. The track is made of cold drawn steel with parallel slot having flanges on both sides. The inside surfaces on which the wheels travel are self cleaning and as smooth as it is possible to make them. Adjustments on both track and carriages may conveniently be altered at any time. The company expects that the No. 10 will supply a need for a simple, durable and noiseless door hanger that can be sold at a price within the reach of the speculative builder.

Invincible Wedge Plate Hammer.

The special feature of the Invincible wedge plate hammer shown herewith is the metal plate which serves to wedge the hammer head to the handle and is then



Invincible Wedge Plate Hammer.

still further secured by two rivets through the handle. The heads of these hammers are guaranteed to stay on and the handles are warranted not to break. Three styles are manufactured, one bell face adze eye and the other two plain face adze eye. The hammers are put on the market by F. W. & E. A. Peck, Cohoes, N. Y.

All Felt Cushion Edge Weather Strip.

The accompanying cut represents the middle width of three sizes of flexible felt weather strip offered by the Union Novelty Works, Putnam, Conn. The especial feature of the strip is in binding only one edge of the felt,



All Felt Cushion Edge Weather Strip.

thus leaving the under ply of felt so that the strip can be blind nailed to casings through the under ply of felt, or through both if desired. It is pointed out that the under ply will be closer to the casing than it would be if both edges were covered with binding.

Victor Folding Guard Press Button Knife.

Adolph Kastor & Bros., 109 Duane street, New York, who both manufacture and import many kinds and styles of cutlery, are now putting out the Victor folding guard press button hunting knife, here illustrated. This knife is made in two sizes, the larger of which is $8\frac{1}{8}$ inches

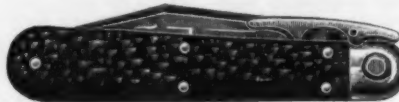


Fig. 1.—Victor Folding Guard Press Button Hunting Knife.

long and the smaller 7 inches long over all, open, as in Fig. 2, the blade of the larger knife being $3\frac{3}{8}$ inches long. They are stag handled, have strong German silver bolsters and folding guard and are brass riveted. This form of construction enables the user, be he sportsman, camper or other individual on an outing, to carry a serviceable pocket knife for all around use, which can be instantly opened with one hand. Taking the knife from



Fig. 2.—Knife Open.

the pocket a pressure on the button releases a strong, flat, inner spring that throws the knife blade open more than 90 degrees, when with a quick, sharp throw forward the blade and guard are locked open ready for use. A similar pressure on the button releases the blade so that it can as easily be closed again for pocket carrying.

The Yale Fruit, Lard and Tincture Press.

The Johnson Foundry & Machine Works, Limited, Battle Creek, Mich., are making the press herewith illustrated. It is constructed with a steel cylinder, having convex steel bottom, which gives it strength and facilitates the operation of pressing, and rests upon feet of malleable iron into which clamps may be affixed for attaching to a table. The top of the cylinder is provided



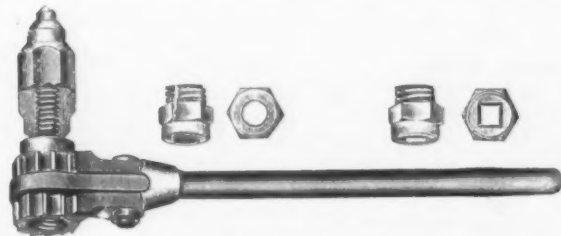
The Yale Fruit, Lard and Tincture Press.

with malleable iron ears into which the beam of the same metal is hinged. The pins which retain the beam are also of malleable iron and are chained to the ears. The screw is turned by a hand wheel to which a crank for increasing the leverage may be attached. On the end of the screw is a steel concavo-convex follow head fortified by a malleable spider which will withstand any pressure exerted upon it. The steel colander fitting in the cylinder is provided with handles so that it can conveniently be removed during the operation of pressing. The whole machine is finished with a heavy plating of tin which will wear as long as the press itself. It is made in 2, 4

and 8 quart sizes, the last two being supplied with sausage stuffing attachments.

Improved Weston Ratchet, Style H.

The Joseph F. McCoy Company, 157 Chambers street, New York, is offering for sale the new Weston ratchet shown in the cut. It is made from the same stock and on the same general lines as other tools of this brand, with the added feature that the socket will take either a square shank or a round taper shank twist drill, as desired. To change from the square shank to the round it is only necessary to remove the square nut on the end of the socket and replace it with the round nut,



Improved Weston Ratchet, Style H.

which a man can easily carry in his pocket. There are obvious advantages in having a tool which can so conveniently be adjusted to operate either style of drill. Style H ratchets are made with handles from 12 to 24 inches long, with a variation of 2 inches between sizes.

Thomas F. Leonard's wholesale and retail Hardware business in Scranton, Pa., one of the city's oldest houses, has been transferred to the Thomas F. Leonard Company, which has been organized and chartered under the laws of Pennsylvania by Mr. Leonard and several of his employees. The entire capital stock of \$100,000 has been paid in full. Mr. Leonard has been elected president of the company; John J. Richardson, vice-president; William F. Shean, treasurer, and Richmond N. Roche, secretary. Improvements are contemplated by the company which will materially enlarge the facilities for carrying on the business, including the erection of a large and commodious warehouse for the wholesale department.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

Lead, English white, in Oil..	9 1/2 @ 9 3/4
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 5 1/2
Lots less than 500 lb.....	@ 7
In Barrels.....	@ 6
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	@ 1/4
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
as'ed tins, add to keg price.....	@ 1 1/4
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2¢ for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2¢ for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	@ 10
Lead, White, Dry in bbls.....	@ 6
Zinc, American, dry.....	4 1/2 @ 4 1/4
Zinc, French:	
Paris, Red Seal, dry.....	8 1/2
Paris, Green Seal, dry.....	9 1/2
Antwerp, Red Seal, dry.....	7 1/2
Antwerp, Green Seal, dry.....	8 1/2

Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	11 1/2 @ 12 1/2
Lots of less than 1 ton.....	11 1/2 @ 12 1/2
Discounts—French Zinc—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades, 1%; 25 bbls., 2%; 50 bbls., 4%.	
Red Seal:	
Lots of 1 ton and over.....	10 1/2 @ 10 1/4
Lots of less than 1 ton.....	10 1/2 @ 11 1/4
Discounts—French Zinc—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades, 1%; 25 bbls., 2%; 50 bbls., 4%.	

Dry Colors—

Black, Carbon.....	5 @ 10
Black, Drop, Amer.....	4 @ 6
Black, Drop, Eng.....	5 @ 15
Black, Ivory.....	16 @ 20
Lamp, Com.....	4 1/2 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	2 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	1 1/2 @ 15
Brown, Spanish.....	1/2 @ 1
Carmine, No. 40.....	33.50 @ 3.60
Green, Chrome, ordinary.....	3 1/2 @ 6

Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 7 1/2
Lots less than 500 lb.....	@ 7
Litharge, American, bbls.....	6 @ 6 1/4
Ocher, American.....	@ ton \$8.50 @ 16.00
Orcher, American Golden.....	2 1/2 @ 3 1/4
Orcher, French.....	1 1/4 @ 2 1/4
Orcher, Foreign Golden.....	3 @ 4
Orange Mineral, English.....	8 @ 10
Orange Mineral, French.....	10 1/2 @ 11 1/4
Orange Mineral, German.....	7 1/2 @ 10
Orange Mineral, American.....	8 @ 8 1/4
Red, Indian, English.....	4 1/2 @ 5 1/4
Red, Indian, American.....	3 @ 3 1/4
Red, Turkey.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer.....	@ 100 lb \$0.50 @ 1.25
Red Venetian, English.....	@ 100 lb \$1.15 @ 1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @ 3 1/4
Sienna, Ital., Raw, Powd.....	3 @ 3 1/2
Sienna, American, Raw.....	1 1/2 @ 2
Sienna, American, Burnt and	
Powdered.....	1 1/4 @ 2
Talc, French.....	@ ton \$15.00 @ 30.00
Talc, American.....	@ ton 15.00 @ 25.00
Terra Alba, French.....	@ 100 lb 90 @ 1.00
Terra Alba, English.....	@ 100 lb 90 @ 1.00
Terra Alba, American.....	@ 100 lb 90 @ 1.00
No. 1.....	60 @ 70
Terra Alba, American.....	@ 100 lb 90 @ 1.00
No. 2.....	45 @ 60
Umber, T'key, Bnt. & Pow.....	2 1/2 @ 3 1/4
Umber, Turkey, Raw & Pow.....	2 1/2 @ 3 1/4
Umber, Burnt, Amer.....	1 1/2 @ 2
Umber, Raw, Amer.....	1 1/2 @ 2
Yellow, Chrome.....	11 @ 14
Vermilion, American Lead.....	10 @ 25
Vermilion, Quicksilver, bulk.....	@ 25
Vermilion, Quicksilver, bags.....	@ 65
Vermilion, English, Import.....	75 @ 80
Vermilion, Chinese.....	\$0.90 @ 1.00

Colors in Oil—

Black, Lampblack.....	12 @ 14
Blue, Chinese.....	26 @ 46
Blue, Prussian.....	33 @ 36
Blue, Ultramarine.....	13 @ 14
Brown, Vandyke.....	47 @ 48
Green, Chrome.....	10 @ 15
Green, Paris.....	@ 24

Sienna, Raw.....	@ 12 @ 15
Sienna, Burnt.....	@ 12 @ 15
Umber, Raw.....	@ 11 @ 14
Umber, Burnt.....	@ 11 @ 14

Miscellaneous—

Barytes, White, Foreign.....	@ ton \$17.50 @ 19.00
Barytes, Amer. floated.....	@ ton 18.00 @ 19.00
Barytes, Crude, No. 1.....	@ ton 10.00 @ 11.00
Chalk, in bulk.....	@ ton 3.00 @ 3.25
Chalk, in bbls.....	@ 100 lb .25
China Clay, English.....	@ ton 11.00 @ 17.00
Cobalt, Oxide.....	@ 100 lb 2.50 @ 2.60
Whiting, Common.....	@ 100 lb .43 @ .48
Whiting, Gilders.....	@ 100 lb .50 @ .55
Whiting, Ex. Gilders.....	@ 100 lb .55 @ .60

Putty, Commercial—

In bladders.....	\$1.70 @ 1.75
In bbls. or tubes.....	1.10 @ 1.15
In 1 lb to 5 lb cans.....	2.60 @ 2.90
In 12 1/2 to 50 lb cans.....	1.40 @ 1.55

Spirits Turpentine—

In Oil bbls.....	.61 @ 61 1/2
In machine bbls.....	.61 1/2 @ 62

Glue—

Cabinet.....	@ 11 @ 15
Common Bone.....	7 @ 9
Extra White.....	11 @ 14
Foot Stock, White.....	8 @ 11
Foot Stock, Brown.....	8 @ 11
German Hide.....	12 @ 18
French.....	10 @ 40
Irish.....	13 @ 216
Low Grade.....	9 @ 12
Medium White.....	14 @ 17

Gum Shellac—

Bleached Commercial.....	33 @ 35
Bone Dried.....	43 @ 45
Button.....	26 @ 45
Diamond L.....	43 @ 45
Fine Orange.....	35 @ 36
A. C. Garnet.....	65 @ 66
Octagon B.....	47 @ 48
T. N.....	40 @ 41
V. S. O.....	85 @ 86

Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	53 @ 54
Linseed, City, boiled.....	55 @ 56
Linseed, State and West'n raw.....	51 @ 52
Linseed, raw Calcutta seed.....	@ 58
Lard, Prime, Winter.....	56 @ 58
Lard, Extra No. 1.....	47 @ 48
Lard, No. 1.....	35 @ 39
Cotton-seed, Crude, f.o.b. mills.....	22 @ 23 1/2
Cotton-seed, Summer Yellow	
Prime.....	28 @ 28 1/4
Cotton-seed, Summer Yellow,	
off grades.....	@ ..
Sperm, Crude.....	@ ..
Sperm, Natural Spring.....	@ ..
Sperm, Bleached Spring.....	@ ..
Sperm, Natural Winter.....	60 @ 63
Sperm, Bleached Winter.....	63 @ 65
Tallow, Prime.....	51 @ 53
Whale, Crude.....	@ ..
Whale, Natural Winter.....	42 @ 44
Whale, Bleached Winter.....	44 @ 46
Menhaden, Brown, Strained.....	28 @ 29
Menhaden, Light, Strained.....	29 @ 30
Menhaden, Bleached, Winter.....	31 @ 32
Menhaden, Ex-Bld. Winter.....	32 @ 33
Menhaden, Southern.....	16 1/2 @ 17
Cocanut, Ceylon.....	@ 10 lb 6 1/2 @ 7 1/4
Cocanut, Ceylon.....	@ 10 lb 6 1/2 @ 7 1/4
Cod, Domestic, Prime.....	34 @ 36
Cod, Newfoundland.....	30 @ 41
Red Elaine.....	31 @ 32
Red, Saponified.....	@ 10 lb 4 @ 4 1/2
Olive, Italian, bbls.....	54 @ 57
Nestafot, prime.....	4 @ 40
Palm, Logos.....	@ 10 lb 5 1/2 @ 5 3/4

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....	10 1/2 @ 11 1/4
Black, 29 gravity, 15 cold test.....	11 1/2 @ 12 1/4
Black, Summe.....	10 1/2 @ 11 1/4
Cylinder, light filtered.....	18 @ 19
Cylinder, dark filtered.....	16 @ 17
Paraffine, 80-90 gravity.....	12 1/2 @ 13
Paraffine, 80-90 gravity.....	11 1/2 @ 12
Paraffine, 80-90 gravity.....	9 1/2 @ 9 3/4
Paraffine, Red.....	11 1/2 @ 13
In small lots 1/4¢ advance.	

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33%, @ 33%, & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00.....33%
North's.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils..... $\frac{1}{2}$ lb 6% $\frac{1}{2}$ ¢
Hay-Budden, Wrought..... $\frac{1}{2}$ lb 6% $\frac{1}{2}$ ¢
Horseshoe brand, Wrought..... $\frac{1}{2}$ lb 6% $\frac{1}{2}$ ¢
Trenton..... $\frac{1}{2}$ lb 6% $\frac{1}{2}$ ¢

Imported—

Peter Wright & Sons..... $\frac{1}{2}$ lb 10% $\frac{1}{2}$ ¢

Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15&10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33% $\frac{1}{2}$ ¢

Augers and Bits—

Com. Double Spur.....70&10% $\frac{1}{2}$ ¢
Jennings' Patn. reg. finish.....50&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Fornster Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25%
No. 30, R. Jennings' list.....40&7%
Russell Jennings.....25&10&2%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....5%
Millers Falls.....50&10&7%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, \$18; large, \$26.....50&10%
Clark's Pattern, No. 1, $\frac{1}{2}$ doz. \$26;
No. 2, \$18.....50&10%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat.....25%
Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25
German Pattern, Nos. 1 to 10,
\$1.60; 11 to 15, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$9.00@10.00
Ames.....2&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....33% $\frac{1}{2}$ ¢
C. E. Jennings & Co.:
L'Hommedieu.....15%
Watrous.....35&5%
Ohio Tool Co.'s.....40%
Snell's.....40%

Awl Hafts—See Hafts, Awl.

Awls—

Brad Awls:
Handled.....gro. \$2.75@3.00
Unhanded, Shl'dered.....gro. \$3.00@3.25
Unhanded, Patent.....gro. \$6@70¢
Peg Awls:
Unhanded, Patent.....gro. \$1@3.14
Unhanded, Shl'dered.....gro. \$5@70¢
Scratch Awls:
Handled, Com.....gro. \$3.50@4.00
Handled, Socket.....gro. \$11.50@12.00
Hurdwood.....40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights:
First Quality.....\$6.75
Second Quality.....\$6.25
Double Bit, base weights:
First Quality.....\$8.75
Second Quality.....\$8.25

Axle Grease—

See Grease, Axle

Axles—

Concord, Loose Collar..... $\frac{1}{4}$ @ $\frac{1}{2}$ ¢
Concord, Solid Collar..... $\frac{1}{4}$ @ $\frac{1}{2}$ ¢

No. 1 Common, Loose..... $\frac{3}{4}$ @ $\frac{1}{2}$ ¢
No. 1 $\frac{1}{2}$ Com., New Style..... $\frac{1}{2}$ @ $\frac{1}{2}$ ¢
No. 2 Solid Collar..... $\frac{1}{4}$ @ $\frac{1}{2}$ ¢
Nos. 7, 8, 11 and 12.....75@75&5%
Nos. 13 to 14.....70&10%
Nos. 15 to 18.....75&10%
Nos. 19 to 22.....75&10%

Boxes, Axle—

Common and Concord, not turned
lb. $\frac{1}{4}$ @ $\frac{1}{2}$ ¢
Common and Concord, turned,
lb. $\frac{1}{4}$ @ $\frac{1}{2}$ ¢
Half Patent.....lb. $\frac{1}{4}$ @ $\frac{1}{2}$ ¢

Bait—

Hendryx:
A Bait.....30%
B Bait.....25%
Competitor Bait.....20&5%

Balances—

Caldwell new list.....50%
Fullman.....50&10% $\frac{1}{2}$ ¢

Spring—

Spring Balances.....60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars—

Steel Crowbars, 10 to 40 lb.....
per lb., 2% $\frac{1}{2}$ ¢

Towel—

No. 10 Ideal, Nickel Plate.....gro. \$6.50

Beams, Scale—

Scale Beams.....40&10% $\frac{1}{2}$ ¢
Chatillon's No. 1.....30%
No. 10 Wire Galvanized.....\$1.75

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered $\frac{1}{2}$ doz. \$0.85;
Tinned.....\$1.00
No. 11 Wire Coppered $\frac{1}{2}$ doz. \$1.10;
Tinned.....\$1.20
No. 10 Wire Galvanized.....\$1.75

**Western W. G. Co.:
No. 1 Electric.....gro. \$7.80
No. 2 Buffalo.....gro. \$9.00
No. 3 Perfection Dust.....gro. \$8.00**

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned.....doz. \$1.50
Holt, No. 1, Tinned.....doz. \$1.50
Holt, No. 13, Japanned.....doz. \$2.00
Holt, No. 2, Tinned.....doz. \$2.25
Lyon, No. 2, Japanned.....doz. \$1.25
Lyon, No. 3, Japanned.....doz. \$1.50
Taplin Mfg. Co.:
No. 60 Improved Dover.....\$4.00
No. 75 Improved Dover.....\$5.00
No. 100 Improved Dover.....\$6.00
No. 102 Improved Dover, Tin'd.....\$8.50
No. 150 Improved Dover, Hotel.....\$15.00
No. 152 Imp'd Dover, Hotel, T'd.....\$17.00
No. 200 Imp'd Dover Tumbler.....\$35.00
No. 202 Imp'd Dover Tumbler, T'd.....\$45.00
No. 300 Imp'd Dover Mammoth, $\frac{1}{2}$ doz. \$25.00
Western, W. G. Co., Buffalo.....\$7.00
Wonder (S. S. & Co.), $\frac{1}{2}$ gro. net, \$8.00

Bellows—

Blacksmith, Standard List.....
60&10@70&10%

Hand—

Inch.....6 7 8 9 10
Doz.....\$4.50 5.00 5.50 6.00 6.50

Molders—

Inch.....9 10 11 12 14
Doz.....\$8.00 9.00 10.50 12.50 14.50

Bells—Cow—

Ordinary goods.....75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey.....75&10%
Texas Star.....30%

Door—

Abbe's Gong.....45%
Burton Gong.....30%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's.....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—

White Metal.....60&5@60&10&5%
Nickel Plated.....50&10@50&10&5%
Swiss.....60&10@60&10&5%
Cone's Glove Hand Bells.....33% $\frac{1}{2}$ ¢
Silver Chime.....33% $\frac{1}{2}$ ¢

Miscellaneous—

Farm Bells.....lb. 2% $\frac{1}{2}$ ¢
Steel Alloy Church and School.....
50&10&5@60&5%
American Tube & Stamping Co.
Gongs.....75%
Table Call Bells.....50&10&5%

Belt—

Extra Hvy. Short Lap.....60&60&5%
Regular Short Lap.....65&10@70%
Standard.....70&5@70&10%
Light Standard.....70&10@75%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft. 17% $\frac{1}{2}$ ¢

Rubber—

Agricultural (Low Grade).....
75@75&5%
Common Standard.....70@70&10%
Standard.....65&70%
Extra.....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters.....20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25;
No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chairs.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks—Tackle—

Common Wooden.....70&10@75&5%
Hartz St. Tackle Blocks.....50&50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....30&19@40&10%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....20% $\frac{1}{2}$ ¢

Bolts—

Carriage, Machine, &c.—
Common Carriage (cut thread):
% & 6 and Smaller.....75&10%
Larger and Longer.....
65&10@2&10%
Phila. Eagle \$3.00 list May 24, '99.....80%

Bolt Ends, list Feb. 14, '95.....

Machine, % & 4 and smaller.....70&2% $\frac{1}{2}$ ¢
Machine, larger and longer.....75&2% $\frac{1}{2}$ ¢
70&2% $\frac{1}{2}$ ¢

Door and Shutter—

Cast Iron Barrel, Japanned,
Round Brass Knob:
Inch.....3 4 5 6 8
Per doz. \$0.30 .35 .45 .56 .75

Cast Iron Spring Foot, Jap'd:
Inch.....6 8 10
Per doz.....\$1.15 1.40 2.00

Cast Iron Chain, Flat, Japanned:
Inch.....6 8 10
Per doz.....\$0.95 1.25 1.55

Cast Iron Shutter, Japanned,
Brass Knobs:
Inch.....6 8 10
Per doz.....\$0.80 .90 1.10

Wrt Barrel Jap'd.....80@80&10%
Wrt "Bronzed".....50&50&10%
Wrt Spring.....70&10@70&10&10%
Wrt Shutter.....50&5@50&10&5%
Wrt Square Neck.....75@75&10%
Wrt Square.....65% $\frac{1}{2}$ ¢
Ives' Patent Door.....60%

Plow and Stove—

Plow.....65&10@65&10&10%
Stove.....82% $\frac{1}{2}$ ¢@82% $\frac{1}{2}$ ¢@10&5%

Tire—

Common.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 18, '84.....82%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82%
Mount Carmel, list Dec. 28, '99.....80%
Russell, Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upon Nut Co.:
Tire Bolts.....72% $\frac{1}{2}$ ¢

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch.....1% 1% 1% 2
Per doz.....\$4.80 5.60 6.40 8.00

Inch.....2% 2% 2% 2%
Per doz.....\$5.65 11.50

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.65; No. 3, \$2.50 each.....25%

Boxes, Mite—

C. E. Jennings & Co.....30%
Langdon.....15&10%
Perfection..... $\frac{1}{2}$ doz. \$30.00
Schatz.....40%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 510 and 600.....35%

Braces—

Common Ball American \$1.25@1.30
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 413.....60%
C. E. Jennings & Co.....50&5%
Mayhew's Hatchet.....60%
Mayhew's Quick Action Hay Pat.....50%
Millers Falls Drill Braces.....25&10%
P. S. & W. Co., Peck's Pat. 60@60&5%
Stanley R. & L. Co.:
Stanley.....35%
Victor.....45%

Brackets—

Wrought Steel.....80&10@80&10&5%
Bradley's Wire Shelf.....80&10&85%
Griffin's Pressed Steel.....80&80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....60%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—

Price per dozen,
Quart.....19 12 14
Water, Regular.....1.40 1.70 1.90
Water, Heavy.....3.40 3.70 3.80
Fire, Rd. Bottom.....2.30 2.55 2.95
Well.....2.55 2.87 3.15

Bucks, Saw—

Hoosier..... $\frac{1}{2}$ gro. \$36.00

Bull Rings—See Rings, Bull

Butts—Brass—

Wrought, list Sept., '96.....30%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....40&10@50%
Fast Joint, Narrow.....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70&70&5%
Parliament Butts.....70&70&5%

Wrought Steel—

Table and Rack Flaps.....75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip.....85%
Japanned Ball Tip Butts.....70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts.....53&10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....55%
1200 series.....33% $\frac{1}{2}$ ¢
200, 300, 600 and 900 series.....60&10%

Hendryx Bronze: 700, 800 series.....40&10%
Hendryx Enamelled.....40&10%

Calipers—See Compasses.
Calks, Toe and Heel—
Blunt, 1 prong.....per lb. 1.44¢
Sharp, 1 prong.....per lb. 1.44¢
Gautier, Blunt.....per lb. 1.44¢
Gautier, Sharp.....per lb. 1.44¢
Perkins, Blunt Toe.....per lb. 1.44¢
Perkins, Sharp Toe.....per lb. 1.44¢

Can Openers—
See Openers, Can.
Cans, Milk—
5 8 10 gal.
Illinois Pattern.....\$1.35 1.85 2.05 each.
New York Pattern.....1.50 2.20 2.45 each.
Baltimore Pattern.....1.50 2.20 2.45 each.
Dubuque.....1.35 1.60 1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:
3 5 10 gal.
\$18.00 60.00 129.60 gro., net.

Caps, Percussion—
Eley's E. B.....58¢@55¢
G. D.....per M 34¢@35¢
F. L.....per M 40¢@42¢
G. E.....per M 48¢@50¢
Musket.....per M 62¢@63¢

Primers—
Berdan Primers, \$2 per M......90%
B. L. Caps (Sturtevant Shell)......20%
\$2 per M......20%
All other primers per M.....\$1.52@1.60

Cartridges—
Blank Cartridges:
32 C. F., \$5.50.....10&5%
38 C. F., \$7.00.....10&5%
32 cal. Rim, \$1.50.....10&5%
22 cal. Rim, \$2.75.....10&5%
B. B. Caps, Con. Ball, Sieged, \$1.90
B. B. Caps, Round Ball.....\$1.49
Central Fire......25%
Target and Sporting Rifle.....15&5%
Primed Shells and Bullets.....15&10%
Rim Fire, Sporting......50%
Rim Fire, Military......15&5%

Castors—
Bed.....70¢@70¢10%
Plate.....60¢@60¢10&5%
Philadelphia.....75¢@75¢10%
Acme Ball Bearing.....31¢
Boss.....70¢@70¢10%
Boss Anti-Friction.....70¢@70¢10%
Gem (Roller Bearing).....80¢
Martin's Patent (Phoenix).....45¢
Standard Ball Bearing.....45¢
Tucker's Patent low list.....50¢
Yale (Double Wheel) low list.....50¢

Cattle Leaders—
See Leaders, Cattle.

Chain, Coil—
American Coil, Straight Link:
3-16 1/4 5-16 3/4 7-16 1/2 9-16
\$7.50 5.35 4.40 3.70 3.55 3.45 3.40
% 1/4 1/2 1 to 1 1/4 inch.
\$3.35 3.30 3.25 3.25 per 100 lb.
German Coil.....60¢@10¢10&70%

Halters and Ties—
Halter Chains.....60¢@10¢10&10%
German Pattern Halter Chains,
list July 21, '97.....60¢@10¢10%
Cov. Ties.....60¢@10¢10%

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6 1/2-6-3, Strght, with ring.....\$23.50
6 1/2-6-2, Strght, with ring.....\$24.50
6 1/2-8-2, Strght, with ring.....\$28.00
6 1/2-10-2, Strght, with ring.....\$32.00
NOTE—Add 2c per pair for Hooks.
Twist Traces 2c per pair higher than
Straight Link.
Trace, Wagon and Fancy
Chains.....60¢@10¢10&5%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron.....60¢@10¢10&5%
Brass.....60¢@10¢10&10%
Safety Chain.....75¢@10¢10&5%
Gal. Pump Chain.....lb. 5¢@5 1/4¢
Covert Mfg. Co.:
Breast.....35&5%
Halter.....35&5%
Heel.....35&5%
Rein.....35&5%
Stallion.....35&5%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneca Community:
Am. Coll and Halters.....40¢@10&5%
Am. Cow Ties.....45¢@50%
Eureka Coll and Halter.....45¢@50&5%
Niagara Coll and Halter.....45¢@50&5%
Niagara Cow Ties.....45¢@50&10&5%
Niagara Wire Dog Chains.....45¢@50&5%
Wire Goods Co.:
Dog Chain.....70¢@10%
Universal Dbl.-Joined Chain.....50%

Chalk—(From Jobbers.)
Carpenters' Blue.....gro. 35¢@38¢
Carpenters' Red.....gro. 30¢@33¢
Carpenters' White.....gro. 25¢@28¢
See also Crayons.

Checks, Door—
Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools.....30%
Farmers' Carpenters', etc., Chests,
with Tools.....20%
Machinists' and Pipe Fitters'
Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists'
Tool Chests.....35%&10%

Chisels—
Socket Framing and Firmer
Standard List.....75¢@75¢10%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer
No. 10.....60%
C. E. Jennings & Co. Socket Fram-
ing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....50%
L. & I. J. White.....30¢@30&5%

Tanged—
Tanged Firmers, \$3 1-3@33 1-3&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181, 25
L. & I. J. White, Tanged.....25&5%

Cold—
Cold Chisels, good quality.....13¢@15¢
Cold Chisels, fair quality.....11¢@12¢
Cold Chisels, ordinary.....9¢@10¢

Chucks—
Beach Pat., each \$3.00.....35&5%
Empire.....25%
Bacsmith's.....25%
Jacobs' Drill Chucks.....25%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat., 0, 1, 2, 35%
Drill Chucks, Skinner Pat., 3, 4, 5,
6, 7, 8.....35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....40%
Geared Scroll.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....40%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....40%
Independent Iron F. Plate Jaws.....40%
Independent Steel F. Plate Jaws.....40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill.....50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—
Adjustable, Hammers.....20¢@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S.....40¢@10%
Co.....60%
Carriage Makers', Sargent's.....35%&10%
Beck's Parallel.....50%
Lineman's, Utica Drop Forge & Tool
Co.....40%
Saw Clamps, see Vises, Saw Filers.
Wood Workers, Hammers.....40&10%

Cleaners, Drain—
Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—
Star Socket, All Steel.....\$4.05 net
Star Shank, All Steel.....\$3.24 net
W. & C. Shank, All Steel.....\$3.25
7 1/4 in., \$3.00; 8 in., \$3.25.

Cleavers, Butchers—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33¢@33&10%
L. & I. J. White.....30%

Clippers—
Chicago Flexible Shaft Company:
98 Chicago Horse.....\$8.75 15%
1902 Chicago Horse.....10.75%
20th Century Horse, each.....\$5.00 20%
Lightning Belt.....\$15.00 15%
Chicago Belt.....\$22.00 15%
Stewart's Patent Sheep.....\$12.75 20%
Finger Nail Clippers
Smith & Hemenway Co. \$ doz. net \$2.00

Clips, Axle—
Eagle, 5-16 and 3/4 in. 75¢@75&10%
Norway, 5-16 and 3/4 in. 60¢@10¢70%

Cloth and Netting, Wire
—See Wire, &c.

Cocks, Brass—
Hardware Hat:
Compression, Plain Bibbs,
Globe, Kerosene, Racking,
&c., Cocks.....70¢@10¢75%

Coffee Mills—
See Mills, Coffee.

Collars, Dog—
Nickel Chain, Walter B. Stevens &
Son's list.....40%
Leather, Walter B. Stevens & Son's
list.....40%

Combs, Curry—
Metal Stamping Co.....40%

Mane and Tail—
Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.
Ordinary Goods.....75¢@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Callipers, Double.....65%
Callipers, Inside or Outside.....65%
Callipers, Wing.....60%
Compasses.....50%

Conductor Pipe—
L. C. L. to Dealers:
Galvanized.

Territory. Nested, Not nested.
Eastern.....70¢@15%
Central.....70¢@15%
Southern.....70¢@15%
So. Western.....60¢@20%
Copper.....15¢@16 oz.
Eastern.....50¢@10%
Central.....50¢@10%

**Southern.....50&5%
So. Western.....50¢@10%
Terms, 60 days; \$5 cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.**

Coolers, Water—
Gal. each.....2 3 4 6 8
Labrador.....\$1.20 \$1.50 \$1.80 \$2.10 \$2.70
Gal.....3 4 6 8
Iceland, ea.....\$1.30 \$2.10 \$2.40 \$3.00
Gal.....2 3 4 6 8
Galvanized, ea.....\$1.85 \$2.00 \$2.25 \$2.30 \$3.30
Galvanized, lined, side handles,
Gal.....2 3 4 6 8
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enamelled.....25%
Agate Lined.....25%

Coopers' Tools—
See Tools, Coopers'.

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided White, Com. lb. 23¢@34 1/2¢
Cable Laid Italian.....lb., A, 18¢; B, 16¢
Common India.....lb. 10¢@10 1/2¢
Cotton Bash Cord, Twisted.....15¢@17¢
Patent Russia.....lb. 11¢@14¢
Cable Laid Russia.....lb. 11¢@15¢
India Hemp, Braided, lb. 12¢@13¢
India Hemp, Twisted, lb. 12¢@13¢
Patent India, Twisted, lb. 12¢@13¢
Anniston Cordage Co.: Braided Cotton,
Old Glory, Nos. 7 to 12.....lb 29¢
Anniston, Nos. 8 to 12, 23¢; No. 7,
25 1/2¢; No. 6, 23 1/2¢.
Anniston Mahogany, Nos. 7 to 12.....lb 28¢
Pearl Braided, cotton, No. 6, 9 lb.
24 1/2¢; No. 7, 23 1/2¢; Nos. 8 to 12, 23¢
Edystone Braided, Nos. 7, 8, 9 and
10.....lb 24¢
Edystone Braided Cotton, No. 6,
7, 8, 9 and 10.....lb 25¢
Harmony Cable Laid Italian, Nos.
7 to 10.....lb 23¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....15¢
Samson, Nos. 8 to 12.....lb 40¢
Braided, Drab Cotton.....lb 40¢
Braided, Italian Hemp.....lb 40¢
Braided, Linen.....lb 55¢
Braided, White Cotton or Spot.....lb 35¢
Manassettus, White.....lb 28¢
Manassettus, Drab.....lb 32¢
Phoenix, White, Nos. 8 to 12, 21¢;
No. 7, 21 1/2¢; No. 6, 25 1/2¢.
Silver Lake:
A quality, White.....40¢
B quality, White.....35¢
B quality, Drab.....35¢
B quality, White.....30¢
Italian Hemp.....40¢
Linen.....57 1/2¢

Wire, Picture—
List Oct., '00.....85¢@10¢10&5%
Hendryx Standard Wire Picture Cord.....85¢@10¢10&5%

Cradles—
Grain.....40¢@10¢10&5%

Crayons—
White Round Crayons, gr. 5 1/2@6¢
Cases, 100 gro., \$1.00, at factory.
D. M. Steward Mfg. Co.:
Jumbo Crayons.....gr. \$3.50
Metal Workers' Crayons, gr. \$2.50
Soapstone Pencils, round, flat
or square.....gr. \$1.50
Rolling Mill Crayons.....gr. \$2.50
Railroad Crayons (composition)
gr. \$2.00

Crooks, Shepherds—
Zelnicer's Lumber:
Red, Blue, Green.....\$ doz. \$6.50
Black.....\$ doz. \$4.00
See also Chalk.

Crow Bars—See Bars, Crow.

Cultivators—
Victor Garden.....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847, \$ doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor.....\$ doz. \$3.00
Wm. Rogers & Son.....\$ doz. \$2.50

Cutters— Glass—
H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—
American.....30%
No.....\$5 \$7 \$10 \$25 \$30 \$40
Each.....25¢@25&7 1/2%
Enterprise.....50%
No.....5 10 12 22 32
Each.....\$2 \$3 \$2.75 \$4.50 \$6
Dixon's.....\$ doz. 40¢@50%
No.....\$14.00 \$17.00 \$19.00 \$30.00
Ideal.....40¢@10&5%
Little Giant.....\$ doz. 40¢@50%
No.....305 310 312 320 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
N. E. Food Choppers.....40%
New Triumph No. 605, \$ doz. \$24.00

Slaw and Kraut—
Henry Diston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30
x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12.....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....\$ doz. \$3.00
Combined Slaw Cutter and Corn
Grater.....\$ doz. \$4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%

Slaw Cutters, 1 Knife.....\$ gr. \$18¢@20¢
Slaw Cutters, 2 Knife.....\$ gr. \$22¢@35¢

Tobacco—
All Iron, Cheap.....doz. \$4.25@4.50
Enterprise.....doz. \$5.25
National, \$ doz. No. 1, \$21; No. 2,
\$18.....40%
Sargent's, \$ doz. No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—
Appleton's, \$ doz., \$16.00.....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger, per doz., \$9.00
Iwan's Improved Post Hole Auger.....\$ doz. \$8.25
Iwan's Vaughan Pattern Post Hole
Augers.....\$ doz. \$6.25
Iwan's Perfection Post Hole Digger.....\$ doz. \$8.25

Dividers—See Compasses.
Doors, Screen—
Phillips', style E, 1/2 in.....\$ doz. \$10.00
Phillips', style 077, 1/2 in.....\$ doz. \$7.50
Phillips', style x-y, 1/2 in.....\$ doz. \$10.50

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, \$
doz., \$18; No. 2, \$15; No. 3, \$12;
No. 4, \$18.

Drawing Knives—
See Knives, Drawing.
Dressers, Emery Wheel—
Diamond Emery Wheel Dressers.....35%
Diamond Wheel Dresser Cutters.....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill,
each.....\$1.50@1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills, 40&5¢@10&10%
Johnson's Automatic Drills, Nos. 2
and 3.....16%
Johnson's Drill Points.....16%
Millers Falls Automatic Drills, 33&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Whitney's, P., S. & W. 50%
Whitney's Hand Drill No. 1, \$10.00;
Adjustable, No. 18, \$12.00.....33 1/2%

Twist Drills—
Bit Stock.....60¢@10¢10&70%
Taper and Straight Shank.....60¢@10¢10&5%

Drivers, Screw—
Screw Driver Bits, per doz. \$5.00@6.00
Balsey's Screw Holder and Driver, \$
doz., 2 1/2-in., \$6; 4-in., \$7.50; 6-in.,
\$9.....40%
Buck Bros' Screw Driver Bits.....50%
Champion.....50%
Edson.....50%
Fray's Hol. H'dle Sets, No. 3, \$12.50
Gay's Double Action Ratchet.....35%
Goodell's Auto. 50&10¢@10&10&5%
Hurdwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21.....25&10%
Millers Falls, Nos. 11, 12, 41, 42.....15&10%
Never Turn.....60%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.....40%
Stanley R. & L. Co.:
No. 64, Varn. Handles.....65%
No. 86.....75%
Victor.....55%
Defiance.....70%
Swan's:
Nos. 65 to 68.....50%
No. 40.....10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough, Galvanized—
Territory. L. C. L.
Eastern.....80&5%
Central.....75¢@10¢10%
Southern.....75¢@12 1/2%
So. Western.....75¢@5%

Elbows and Shoes—
Factory shipments, all territories:
Galv. Steel and Galv. C. C.
Iron and Steel, Standard
Gauge.....60¢@10%
No. 20.....35%
No. 21.....25%
No. 22.....10%
Copper.....37 1/2%
Perfect Elbow (S. S. & Co.).....40%

Emery, Turkish—
4 to 6 5/4 to 180 Flour
Kegs.....lb. 5¢ 5 1/4¢ 5 1/2¢ 5 3/4¢
1/4 Kegs.....lb. 5 1/4¢ 5 1/2¢ 5 3/4¢
1/4 Kegs.....lb. 5 1/4¢ 5 1/2¢ 5 3/4¢
10-lb. cans,
10 in case.....6 1/2¢ 7¢ 6¢
10-lb. cans, less
than 10.....10¢ 10¢ 8¢
Less quantity.....10¢ 10¢ 8¢
NOTE—In lots 1 to 3 tons a discount
of 10% is given.

Extractors, Lemon Juice
—See Squeezers, Lemon.

Fasteners, Blind—
Zimmerman's.....50&10%
Walling's.....40&10%

Cord and Weight—
40%

Faucets—

Cork Lined.....	50¢@50¢10%
Metallic Key, Leather Lined.....	60¢10@70%
Red Cedar.....	40¢10@50%
Petroleum.....	70¢10@75%
B. & L. B. Co.:.....	60¢10%
Star.....	50¢10%
West Lock.....	50¢10%
John Sommer's Peerless Tin Key.....	50¢
John Sommer's Boss Tin Key.....	50¢
John Sommer's Victor Mtl. Key.....	50¢
John Sommer's Duplex Metal Key.....	50¢
John Sommer's Diamond Lock.....	50¢
John Sommer's I. X. L. Cork Lined.....	50¢
John Sommer's Reliable Cork Lined.....	50¢10%
John Sommer's Chicago Cork Lined.....	60¢
John Sommer's O. K. Cork Lined.....	50¢
John Sommer's No Brand, Cedar.....	50¢
John Sommer's Perfection, Cedar.....	40¢

McKenna, Brass:	
Burglar Proof, N. P.....	25%
Improved, 3/4 and 1/2 inch.....	25%
Self Measuring.....	40¢10%
Enterprise, 3/4 doz.....	36.00
Lane's, 3/4 doz.....	36.00
National Measuring, 3/4 doz.....	36.00@10%

Felloe Plates—

See Plates, Felloe.

Files— Domestic—

List revised Nov. 1, 1899.

Best Brands.....	70¢10@75¢5%
Standard Brands.....	75¢10@75¢10@10%
Lower Grade.....	75¢10@100¢10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....	33 1-3@40%
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Fixtures, Fire Door—

Richards Mfg. Co.:.....	32.75
Universal No. 103.....	32.75
Special, No. 104.....	32.75
Fusible Links, No. 98.....	50%
Expansion Bolts, No. 107.....	60¢10%

Grindstone—

Net Prices:	
Inch.....	15 17 19 21 23
Per doz.....	2.15 2.85 3.25 3.75 4.50
P. S. & W. Co.....	30.10@40%
Reading Hardware Co.....	60%
Sargent's.....	70%
Stowell's Giant Grindstone.....	3/4 doz. \$6.00
Stowell's Grindstone Fixtures, Extra Heavy.....	50¢10@10%
Stowell's Grindstone Fixtures, Light.....	60¢10%

Fodder Squeezers—

See Compressors.

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many fobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Rzy Potato.....	60¢10%
Victor, Hay.....	60¢10%
Victor, Header.....	60¢10%
Victor, Header.....	60¢10%
Champion, Hay.....	60¢10%
Champion, Header.....	60¢10%
Champion, Manure.....	60¢10%
Columbia, Hay.....	60¢10%
Columbia, Manure.....	60¢10%
Columbia, Spading.....	70¢12%
Hawkeye Wood Barley.....	40%
W. & C. Potato Digger.....	60¢10%
Acme Hay.....	60¢10%
Acme Manure, 4 time.....	60¢10%
Dakota Header.....	60¢10%
Jackson Steel Barley.....	60¢10%
Kansas Header.....	60%
W. & C. Favorite Wood Barley.....	40%

Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz.....	75¢@80¢
Red, S'g't Bar, per doz.....	1.00@1.15
Red, Dbl. Brace, per doz.....	1.10@1.30

Freezers, Ice Cream—

Qt.	1 2 3 4 6
Each.....	\$1.30 \$1.60 \$1.90 \$2.20 \$2.30

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.**Fuse— Per 1000 Feet.**

Hemp.....	32.75
Cotton.....	3.20
Waterproof Sgl. Taped.....	3.65
Waterproof Dbl. Taped.....	4.40
Waterproof Tpl. Taped.....	5.15

Gates, Molasses and Oil—

Stebbins' Pattern.....	80¢10@80¢10@5%
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Gauges—

Marking, Mortise, &c.....	50¢10@50¢10@10%
Chapin-Stephens Co.:.....	50¢10@50¢10@10%
Marking, Mortise, &c.....	50¢10@50¢10@10%
Scholl's Patent.....	50¢10@50¢10@10%
Door Hangers.....	50¢50¢10%
Stanley R. & L. Co.'s Butt and Rabbit Gauge.....	35%
Marking and Mortise.....	40%
Wire, Brown & Sharpe's.....	25%
Wire, Morse's.....	25%
Wire, P. S. & W. Co.....	33%

Gimlets— Single Cut—

Numbered assortments, per gro.	
Nail, Metal, No. 1.....	2.00
Spike, Metal, No. 1.....	3.00
Nail, Wood Handled, No. 1.....	2.30
Spike, Wood Handled, No. 1.....	2.30
Spike, Wood Handled, No. 2.....	2.30
Spike, Wood Handled, No. 3.....	2.30

Glass, American Window

See Trade Report.

Glasses, Level—

Chapin-Stephens Co.....	60¢10@10¢10%
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Glue, Liquid Fish—

Bottles or Cans, with Brush.....	25¢50%
Cans (1/2 pts., pts., qts., 1/2 gal., gal.).....	25¢14%
International Glue Co. (Martin's).....	40¢10%

Grease, Axle—

Common Grade.....	gro. \$1.50@5.50
Dixon's Everlasting.....	10-lb pails, ea. 85¢
Dixon's Everlasting in boxes.....	3 doz. 1 lb. \$1.20; 2 lb. \$2.00
Helmet Hard Oil.....	25%

Grips, Nipple—

Perfect Nipple Grips.....	40¢10@2%
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Griddles, Soapstone—

Pike Mfg. Co.....	33%@33%10%
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Grindstones—

Bicycle Emery Grinder.....	\$6.50
Bicycle Grindstones, each.....	\$2.50@3.00
Pike Mfg. Co.:.....	
Improved Family Grindstones, per inch, 3/4 doz.....	\$2.00
Pike Mower and Tool Grinder.....	\$4.00
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....	\$3.25

Halters and Ties—

Covert Mfg. Co.:.....	35¢5%
Web.....	50¢10%
Jute Rope.....	50%
Sisal Rope.....	30¢10%
Cotton Rope.....	45%
Hemp Rope.....	45%
Covert's Saddlery Works:	
Web and Leather Halters.....	70%
Jute and Manila Rope Halters.....	70%
Sisal Rope Halters.....	60¢20%
Jute, Manila and Cotton Rope Ties.....	70%
Sisal Rope Ties.....	60¢10%
E. T. Rugg & Co.:.....	
Leather Halters.....	50%
Web Halters and Webbing.....	60%
Jute and Sisal Rope Halters.....	60%
Jute and Sisal Horse and Cattle Ties.....	60%
Cotton Horse Ties.....	60%
Livery Ties, Braided.....	60%

Hammers—**Handled Hammers—**

Heller's Machinists'.....	40¢10@40¢10@10%
Heller's Farriers.....	40¢10@40¢10@10%
Magnetic Tack, Nos. 1, 2, 3.....	\$1.25
\$1.50, \$1.75.....	50%
Peck, Stow & Wilcox, Steel.....	50%
Fayette R. Plumb:	
Plumb, A. E. Nail.....	33%@74%@23%10@74%
Engineers' and B. S. Hand.....	60¢10%
Machinists' Hammers.....	50¢50¢10@5%
Riveting and Timmers.....	40¢2%@40¢10@24%
Sargent's C. S. New List.....	40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50¢.....	80¢10@10¢85%
3 to 5 lb., per lb. 40¢.....	80¢10@10¢85%
Over 5 lb., per lb. 30¢.....	85¢85¢10%
Wilkinson's Smiths'.....	1 lb. 9¢10%

Handles—

Agricultural Tool Handles	
Axe, Pick, &c.....	60¢5¢@60¢10@5%
Hoe, Rake, &c.....	45¢50¢45%
Fork, Shovel, Spade, &c.....	45¢50¢45%
Long Handles.....	45¢50¢45%
D Handles.....	40%
Cross-Cut Saw Handles—	
Atkins'.....	40%
Champion.....	45¢45¢10%
Disston's.....	50%

Mechanics' Tool Handles—

Auger, assorted.....	gro. \$3.50@32.85
Brad Axel.....	gro. \$1.65@31.85
Chisel Handles:	
Apple Tanged Firmer, gro. assorted.....	\$2.40@32.63
Hickory Tanged Firmer, gro. assorted.....	\$2.15@32.40
Apple Socket Firmer, gro. assorted.....	\$1.75@31.95
Hickory Socket Firmer, gro. assorted.....	\$1.45@31.60
Hickory Socket Framing, gro. assorted.....	\$1.60@31.75
File, assorted.....	gro. \$1.30@31.40
Hammer, Hatchet, Axe, &c.....	60¢10@60¢10@10%
Hand Saw, Varnished, doz. 80¢85¢; Not Varnished.....	65¢75¢
Plane Handles:	
Jack, doz. 30¢; Jack, Bolted.....	75¢
Fore, doz. 45¢; Fore, Bolted.....	90¢
Chapin-Stephens Co.:.....	
Carving Tool.....	40¢10@10%
Chisel.....	65¢65¢10%
File and Awl.....	65¢65¢10%
Saw and Plane.....	40¢40¢10%
Screw Driver.....	40¢40¢10%
Milner Falls Adj. and Ratchet Auger Handles.....	15¢10%
Nicholson Simplicity File Handle.....	3/4 gro. \$0.85@31.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.	
Barn Door, New Pattern, Round Groove, Regular:	
Inch.....	3 4 5 6 8
Single Doz.....	\$0.90 1.25 1.60 1.95 2.50
Barn Door, New England Pattern, Check Back, Regular:	
Inch.....	3 4 5 6
Single Doz.....	\$1.30 1.85 2.50 3.00

Allith Mfg. Co.:.....	
Reliable, No. 1.....	per doz. \$8.00
Reliable, No. 2.....	per doz. \$9.60
Chicago Spring Butt Co.:.....	
Friction.....	25%
Oscillating.....	25%
Big Twin.....	25%
Chisholm & Moore Mfg. Co.:.....	
Baggage Car Door.....	50%
Elevator.....	30%
Railroad.....	30%
Cronk & Carrier Mfg. Co.:.....	
Loose Axle.....	60¢10%
Roller Bearing.....	70%
Griffin Mfg. Co.:.....	
Solid Axle, No. 10.....	\$12.00
Roller Bearing, No. 11.....	\$15.00
Roller Bearing, Ex. H.....	70%
22, \$18.00.....	70%
Hinged Hangers.....	\$16.00@60¢10%
Lane Bros. Co.:.....	
Parlor, Ball Bearing.....	\$4.00
Parlor, Standard.....	\$3.15
Parlor, No. 10.....	\$3.80
Parlor, New Model.....	\$2.10
Parlor, New Champion.....	\$2.25
Barn Door, Standard.....	60¢10@2%
Hinged.....	net \$4.40
Corbed.....	60¢10%
Special.....	70¢5%
Lawrence Bros.:.....	
Advance.....	60¢10%
Cleveland.....	75%
Clippard, No. 75.....	60%
Crown.....	60¢10%
Easy Parlor Door.....	\$1.25
\$2.50; Single Sets, \$1.25.....	Sets,
Giant.....	60¢5%
Hummer.....	70¢5%
New York.....	60¢10%
Peerless.....	75%
Sterling.....	60¢10%
McKinney Mfg. Co.:.....	
No. 1, Special.....	\$15.00
No. 2, Standard.....	\$18.00
Hinged Hangers.....	\$18.00
Meyers' Stayon Hangers.....	60¢5%
Richards Mfg. Co.:.....	
Pioneer Wood Track No. 3.....	\$2.00
Ball B'r'g St'l Track No. 10.....	\$0.40
Roller B'r'g St'l Track No. 12.....	\$2.15
Roller B'r'g St'l Track No. 13.....	\$2.30
Hero, Adj. Track No. 19.....	\$0.40
Adjustable Track Tandem Trolley Track No. 16.....	\$0.40
Seal, Steel Track No. 8.....	\$2.25
Aut. Adj. Track No. 22.....	\$0.40
Trolley R. D. No. 17.....	\$1.25
Trolley F. D. No. 123.....	\$2.10
Trolley F. D. No. 121.....	\$2.25
Trolley F. D. No. 150.....	\$2.35
Safety Underwriters F. D. No. 101.....	50%
Tandem No. 44.....	2% and 3 60¢10%
Patco, Adjustable Track No. 132.....	50¢10%
Royal, Adjustable Track No. 122.....	50¢10%
Ives' Wood Track No. 1.....	\$2.00
Trolley R. D. No. 29.....	\$0.40
Trolley R. D. No. 24.....	\$1.30
Trolley R. D. No. 27.....	\$1.40
Trolley R. D. No. 28.....	\$1.40
Roller Bearings No. 30.....	41
43.....	75%
Anti-friction No. 42.....	60¢20%
Hinged Tandem No. 48.....	60¢5%
Folding Door B. B. Swivel No. 135.....	40%
Safety Door Hanger Co.:.....	
Storm King Safety.....	60%
U. S. Standard Hinge.....	60%
Stowell Mfg. & Foundry Co.:.....	
Acme Parlor Ball Bearing.....	40%
Alax Hinge Door.....	60%
Alax Parlor Door.....	50¢10@5%
Atlas.....	50%
Baggage Car Door.....	50%
Climax Anti-Friction.....	50¢10%
Elevator.....	40%
Express.....	50%
Frigh Car Door.....	60%
Interstate.....	50¢10%
Lundy Parlor Door.....	50¢10%
Magie.....	60%
Matchless.....	60¢10%
Nansen.....	70¢5%
Parlor Door.....	50¢10%
Railroad.....	50%
Rex Hinge Door.....	60%
Street Car Door.....	50%
Steel, Nos. 300, 404, 500.....	50¢10%
Underwriters' Fire Door.....	40%
Wild West Warehouse Door.....	50%
Zenith for Wood Track.....	50¢10%
A. L. Sweet Iron Works:	
Check Back.....	70%
Climax Anti-Friction.....	50¢10%
Eagle.....	70%
Hyle Hinge.....	60%
Perfection.....	60%
Pilot.....	60%
Pilot Hinge.....	60%
Rider Wooter.....	65%
Western Pattern.....	70%
Taylor & Boggis F'y Co.'s Kid.....	50¢15@10@5%
Wilcox Mfg. Co.:.....	
Bike Roller Bearing.....	60¢10%
C. J. Roller Bearing.....	60¢10%
Cycle Ball Bearing.....	50%
Dwarf Ball Bearing.....	40%
Ives' Wood Track.....	60¢10%
L. T. Roller Bearing.....	60¢10@5%
New Era Roller Bearing.....	50¢10%
O. K. Roller Bearing.....	60¢10@5%
Prindle, Wood Track.....	60%
Richards' Wood Track.....	60%
Richards' Steel Track.....	60%
Spencer Roller Bearing.....	60¢10%
Tandem, Nos. 1 and 2.....	60%
Underwriters' Roller Bearing.....	40%
Velvet.....	50%
Wilcox Auditorium Ball B'r'g.....	20%
Wilcox Barn Trolley No. 125.....	40%
Wilcox Elev. Door, Nos. 112 and 122.....	50%
Wilcox Elev. Door, No. 132.....	40%
Wilcox Fire Trolley, Roller Bearing.....	30%
Wilcox Le Roy Noiseless Ball Bearing.....	40%
Wilcox New Century.....	50¢10@10%
Wilcox O. K. Steel Track.....	50%
Wilcox O. K. Trolley.....	50%
Wilcox Trolley Ball Bearing.....	40%
Wilcox Wideman Narrow Gauge Ball Bearing.....	40%
For Track, see Rail.	
Hangers— Garment—	
Pullman Trouser, 3/4 gro. No. 1.....	\$9.00
No. 4, \$24.00; No. 7, \$7.50.....	
Victor Folding.....	3/4 gro. \$9.00
Western, W. G. Co.....	70¢10%

Gate—

Myers' Patent Gate Hangers, 3/4 doz. net.....	\$4.50
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Hasps—

Griffin's Security Hasp.....	50%
McKinney's Perfect Hasp, 3/4 doz.....	50%

Hatchets—

Regular list, first quality.....	40¢74%
Second quality.....	\$1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5.....	\$1.75
No. 5B.....	\$2.00
No. 3.....	\$2.25
No. 3D.....	\$2.75
No. 7D.....	\$3.00
No. 3E.....	\$3.25
No. 1.....	\$3.50
Clark Coal, 3/4 doz.....	\$0.75

Hinges—

Wrought Iron Hinges—
 Strap and T Hinges, etc., list
 December 20, 1904:
 Light Strap Hinges... 70%
 Heavy Strap Hinges... 75%
 Light T Hinges... 65%
 Heavy T Hinges... 70%
 Extra Heavy T Hinges... 70%
 Hinge Hasps... 50%
 Cor. Heavy Strap... 75%
 Cor. E. Heavy T... 70%
 Screw Hook... 6 to 12 in. 1b. 3/4¢
 and Strap... 1 1/2 to 20 in. 1b. 3/4¢
 22 to 36 in. 1b. 3/4¢
 Screw Hook and Eye:
 3/4 to 1 inch... 1b. 6¢
 1/2 inch... 1b. 7¢
 1/4 inch... 1b. 9¢

Hitchers, Stall—
 Covert Mfg. Co. Stall Hitchers... 35%
Hods— Coal—

Inch	15	16	17	18
Gale, Open	\$2.50	2.75	3.00	3.25
Jap. Open	\$1.90	2.10	2.25	2.55
Galv. Funnel	\$3.00	3.30	3.60	3.90
Jap. Funnel	\$2.45	2.65	2.85	3.30

Masons, Etc.—
 Cleveland Wire Spring Co.:
 Steel Mortar, No. 158... each \$1.25
 Steel Brick, No. 162... each \$0.95

Hoes— Eye—
 Scovill and Oval Pattern...
 60¢ to 10¢ to 10¢ to 10¢
 Grub, list Feb. 23, 1899...
 70¢ to 10¢ to 75¢ to 10¢
 D. & H. Scovill... 35%

Handled—
 NOTE—Manufacturers are selling
 from the list of September 1, 1904, but
 many jobbers are still using list of
 August 1, 1899, or selling at net prices.
 Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25
 Ft. Madison Cotton Hoe... 70¢ to 10¢
 Ft. Madison Crescent Cultivator Hoe...
 70¢ to 10¢
 Ft. Madison Mattock Hoe... 70¢ to 10¢
 Regular Weight... 60¢ to 65¢
 Junior Size... 40¢ to 45¢
 Ft. Madison Sprouting Hoe... 50¢ to 55¢
 Ft. Madison Dixie Tobacco Hoe...
 75¢ to 10¢
 Kretzinger's Cut Easy... 45¢ to 50¢
 Warren Hoe... 45¢ to 50¢
 W. & C. Ivanhoe... 75¢ to 80¢
 B. B. 6 in. Cultivator Hoe... 35¢ to 40¢
 B. B. 6 1/2 in. Cultivator Hoe... 35¢ to 40¢
 Acme Weeding... 40¢ to 45¢
 W. & C. L. tining Shuffle Hoe... 40¢ to 45¢

Hoisting Apparatus—
 See Machines, Hoisting.
Holders— Bit—
 Angular, 3/4 doz. \$24.00... 45¢ to 10¢

Door—
 Bardley's... 45¢
 Empire... 50¢
 Pullman... 50¢

File and Tool—
 Nicholson File Holders and File
 Handles... 35¢ to 40¢
Fruit Jar—
 Triumph Fruit Jar Holder, 3/4 gross,
 \$10.80; 3/4 doz. \$1.25

Hones—Razor—
 Pike Mfg. Co., Belgian, German and
 Swaty... 50%

Hooks—Cast Iron—
 Bird Cage, Reading... 40%
 Bird Cage, Sargent's List... 60¢ to 10¢
 Ceiling, Sargent's List... 50¢ to 10¢
 Clothes Line, Reading List... 40%
 Clothes Line, Sargent's List... 50¢ to 10¢
 Coat and Hat, Sargent's List... 50¢ to 10¢
 Clothes Line, Stowell's... 50¢ to 10¢
 Coat and Hat, Stowell's... 45¢ to 50¢
 Coat and Hat, Stowell's... 45¢ to 50¢
 Coat and Hat, Wrightville... 65¢
 Harness, Reading List... 40%
 Harness, Stowell's... 50%
 School House, Stowell's... 70%

Wire—
 Belt... 80¢ to 10¢
 Wire C. & H. Hooks... 75¢ to 10¢
 Atlas, Coat and Hat... 75¢ to 10¢
 Bradley Metal Clasp Coat
 and Hat... 75¢ to 10¢
 Columbian Hdw. Co., Gem... 70¢ to 10¢
 Parker Wire Goods Co., King... 70¢ to 10¢
 Van Wagner, Coat and Hat... 70%
 Western W. G. Co., Molding... 75%
 Wire Goods Co.:
 Acme... 60¢ to 10¢
 Chief... 70%
 Crown... 70%
 Czar... 65%
 V. Brace... 70¢ to 10¢
 Czar Harness... 50¢ to 10¢

Wrought Iron—
 Box, 6 in., per doz., \$1.00; 8 in.,
 \$1.25; 10 in., \$2.50.
 Cotton... doz. \$1.05 to \$1.25
 Wrought Staples, Hooks, etc.—
 See Wrought Goods.

Miscellaneous—
 Hooks, Bench, see Stops, Bench.
 Bush, Light, doz. \$1.75; Medium,
 \$5.35; Heavy, \$8.25
 Grass, best, all sizes, per doz. \$1.50
 Grass, common grades, all sizes,
 per doz. \$1.30
 Whiffletree... 1b. 5/4¢ to 6¢
 Hooks and Eyes:
 Brass... 60¢ to 10¢ to 60¢ to 10¢ to 10¢
 Malleable Iron... 70¢ to 10¢ to 70¢ to 10¢ to 10¢
 Covert Mfg. Co. Gate and Scuttle
 Hooks... 35%
 Covert Saddlery Works' Bolt Locking
 Gate and Door Hook... 60%
 Ft. Madison Cut-Easy Corn Hooks...
 20 doz. \$3.25 net
 Bench Hooks—See Bench Stops.
 Corn Hooks—See Knives, Corn.

Horse Nails—
 See Nails, Horse.

Horseshoes—
 See Shoes, Horse.
Hose, Rubber—
 Garden Hose, 3/4-inch:
 Competition... ft. 5 @ 6¢
 3-ply Standard... ft. 8 @ 9¢
 4-ply Standard... ft. 10 @ 11¢
 4-ply extra... ft. 11 @ 13¢
 3-ply extra... ft. 14 @ 16¢
 Cotton Garden, 3/4-in., coupled:
 Low Grade... ft. 8 @ 9¢
 Fair Quality... ft. 10 @ 11¢

Irons— Sad—
 From 4 to 10... 1b. 3/4¢ to 3¢
 B. B. Sad Irons... 1b. 3/4¢ to 3¢
 Chinese Laundry... 1b. 3/4¢ to 3¢
 Chinese Sad... 1b. 4¢ to 4 1/4¢
 Mrs. Potts', cents per set:
 Nos. 50 55 60 65
 Jap'd Tops... 62 59 72 69
 Tin'd Tops... 65 62 75 72
 New England Pressing... 1b. 3/4¢ to 4 1/4¢

Pinking—
 Pinking Irons... doz. 50¢ to 60¢
Soldering—
 Soldering Coppers, 2 1/2 & 3.20 @ 2 1/2¢
 1 1/2 & 2... 22¢ to 23¢

Jacks, Wagon—
 Covert Mfg. Co.:
 Auto Screw... 30¢ to 2¢
 Steel... 45%
 Covert's Saddlery Works:
 Dais... 60¢ to 10¢
 Victor... 60%
 Lockport... 50%
 Lane's Steel... 30¢ to 10¢
 Richards' Tiger Steel, No. 130... 50¢ to 10¢

Kettles—
 Brass, Spun, Plain... 20¢ to 25%
 Enamelled and Cast Iron—See Ware,
 Hollow.

Knives—
 Butcher, Kitchen, &c.—
 Foster Bros. Butcher, &c... 30%
 Smith & Hemenway Co... 40¢ to 10¢
 Wilkinson Shear & Cutlery Co... 50%

Corn—
 Withington Acme... 3/4 doz. \$2.65;
 Dent, \$2.75; Adj. Serrated, \$2.20;
 Serrated, \$2.10; Yankee No. 1, \$1.50;
 Yankee No. 2, \$1.15.

Drawing—
 Standard List... 75%
 C. E. Jennings & Co., Nos. 45, 46, 50,
 Jennings & Griffin, Nos. 41, 42... 60%
 Ohio Tool Co.'s... 70%
 Swan's... 10¢ to 10¢ to 2¢
 Watrous... 16%
 L. & J. White... 20¢ to 5¢ to 2¢

Hay and Straw—
 Serrated Edge, per doz. \$5.25 to \$5.50
 Iwan's Sickle Edge... 40¢ to 50¢
 Iwan's Serrated... 40¢ to 10¢

Mining—
 Buffalo... 3/4 gro. \$13.00
Miscellaneous—
 Farriers'... doz. \$3.00 to \$3.25
 Westenholm... 3/4 doz. \$3.00 to 3.25

Knobs—
 Base, 2 1/2-inch, Birch, or Maple,
 Rubber tip... gro. \$1.15 to \$1.50
 Carriage, Jap., all sizes...
 gro. 40¢ to 45¢
 Door, Mineral... doz. 65¢ to 70¢
 Door, Por. Jap'd... doz. 70¢ to 75¢
 Door, Por. Nickel... doz. \$2.05 to \$2.15
 Bardley's Wood Door, Shutters, &c... 35%
 Picture, Sargent's... 60¢ to 10¢ to 10¢

Lacing, Leather—
 See Belting, Leather.
Ladders, Store, &c.—
 Lane's Store... 25%
 Myers Noiseless Store Ladders... 50%
 Richards Mfg. Co.:
 Improved Noiseless No. 112... 50%
 Climax Shelf, No. 113... 50%
 Trolley, No. 109... 50%

Ladies, Melting—
 L. & G. Mfg. Co. (low list)... 25%
 P. S. & W... 50%
 Reading... 60%
 Sargent's... 50¢ to 10¢

Lanterns—Tubular—
 Regular Tubular, No. 0...
 doz. \$1.25 to \$1.45
 Lift Tubular, No. 0...
 doz. \$1.50 to \$1.15
 Hinge Tubular, No. 0...
 doz. \$1.50 to \$1.15

Other Styles—
 40¢ to 10¢ to 40¢ to 10¢ to 5¢
Bull's Eye Police—
 No. 1, 2 1/4-inch... \$2.50 to \$2.75
 No. 2, 3-inch... \$2.75 to \$3.00

Lasts and Stands, Shoe—
 Stowell's Atlas, Malleable Iron... 50%
 Stowell's Badger, Cast Iron... 50%

Latches—Thumb—
 Roggin's Latches, with screw...
 doz. 35¢ to 40¢

Door—
 Cronk & Carrier Mfg. Co., No. 101,
 3/4 doz. \$2.00
 Cronk & Carrier Mfg. Co., Latch,
 Hasp and Staples... 50%
 Richards' Bull Dog, Heavy, No.
 125... 50%
 Richards' Trump, No. 157... \$1.50

Leaders, Cattle—
 Small... doz. 50¢; large, 60¢
 Covert Mfg. Co., Cotton and Hemp... 45%

Lifters, Transom—
 R. & E... 35%

Lines—
 Wire Clothes, Nos. 18 19 20
 100 feet... \$2.20 2.00 1.70
 75 feet... \$1.80 1.70 1.30
 Samson Cordage Works:
 Solid Braided Chalk, Nos. 8 to 3, 40%
 Silver Lake Braided Chalk, No. 0,
 \$6.00; No. 1, \$6.50; No. 2, \$7.00; No.
 3, \$7.50... 3/4 gr. 20%

Masons' Lines, Shade Cord, &c.:
 White Cotton, No. 3 1/2, \$1.50; No. 4,
 \$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
 \$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75.
 Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
 No. 4 1/2, \$4.50.
 Tent and Awning Lines: No. 5,
 White Cotton, \$7.50; Drab Cotton,
 \$8.50.
 Clothes Lines, White Cotton: 50 ft.,
 \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
 100 ft., \$5.25.
 Anniston Waterproof Clothes, 50 ft.,
 \$9.00; 100 ft., \$17.00; 200 ft., \$32.00.
 Air
 Line: \$22.00; Acme, \$17.00; Alabama,
 \$15.00; Empire, \$14.00; Advance,
 \$13.50; Oriole, \$20.00; Albemarle,
 \$13.50; Eclipse, \$12.50; Chicago,
 \$11.00; Standard, \$10.00; Columbia,
 \$8.50; Allston, \$12.50; Calhoun, \$11.00.

Locks— Cabinet—
 Cabinet Locks... 33 1/4¢ to 33 1/2¢ to 7 1/4¢
Door Locks, Latches, &c.—
 NOTE—Net Prices are very often made
 on these goods.
 Reading Hardware Co... 40%
 R. & E. Mfg. Co... 40%
 Sargent & Co... 40¢ to 10¢
 Stowell's Steel Door Latches... 50%

Elevator—
 Stowell's... 50%

Padlocks—
 Wrought Iron... 75¢ to 10¢ to 80¢ to 65¢
 R. & E. Mfg. Co. Wrought Steel and
 Brass... 75¢ to 75¢ to 10¢

Sash, &c.—
 Ires' Patent:
 Bronze and Brass... 62 1/4¢
 Crescent... 50¢ to 10¢
 Iron... 62 1/4¢
 Window Ventilating... 60%
 Robison Patent Ventilating Sash
 Lock... 40%
 Wrought Bronze and Brass... 55%
 Wrought Steel... 55%
 Pullman Patent Ventilating Lock... 25%
 Reading... 40%

Machines—Boring—
 Com. Up't, without Augers... \$2.00
 Com. Ang'l'r, without Augers... \$2.25
 R. & E. Mfg. Co.: Upright, Angular,
 Improved No. 3... \$1.25 No. 1, \$5.00
 Improved No. 4... 3.75 No. 2, 3.38
 Improved No. 5... 2.75
 Jennings' Nos. 1 and 4... 35¢ to 5¢
 Millers' Falls... 5.75
 Snell's, Rice's... 2.25 2.75

Corking—
 Reisinger Invincible Hand Power...
 3/4 doz. \$18.00

Fence—
 Williams' Fence Machines... each \$5.50

Hoisting—
 Moore's Anti-Friction Differential
 Pulley Block... 30%
 Moore's Hand Hoist with Lock
 Brake... 30%

Ice Cutting—
 Chandler's... 12 1/4%

Washing—
 Ross Washing Machine Co.: Per doz.
 Ross No. 1... \$57.00
 Ross Rotary... \$54.00
 Champion Rotary Banner No. 1... \$54.00
 Standard Champion No. 1... \$48.00
 Standard Perfection... \$26.00
 Cincinnati Square Western... \$30.00
 Uneda American, Round... \$30.00

Mallets—
 Hickory... 45¢ to 50¢
 Lignumvitae... 45¢ to 50¢
 Timmers' Hickory and Apple-
 wood... doz. 45¢ to 50¢

Mangers, Stable—
 Swett Iron Works... 50%

Mashers, Vegetable—
 Western, W. G. Co., Potato... 60¢ to 10¢

Mats, Door—
 Elastic Steel (W. G. Co.)... 10%

Mattocks—
 See Picks and Mattocks.

Milk Cans—
 See Cans, Milk.

Mills, Coffee, &c.—
 Enterprise Mfg. Co... 25¢ to 30%
 National List Jan. 1, 1902... 30%
 Parker's Columbia & Victoria... 50¢ to 10¢ to 60%
 Parker's Box and Side... 50¢ to 10¢ to 60%
 Swift, Lane Bros. Co... 60%

Mowers, Lawn—
 NOTE—Net prices are generally quoted
 Cheapest... all sizes, \$1.85 to \$2.00
 Cheap... all sizes, \$2.00 to \$2.50
 Better Grade... all sizes, \$2.50 to \$4.50
 12 1 1/2 16 18 in.
 High Grade... \$4.50 4.75 5.00 5.25
 Continental... 60¢ to 5¢
 Great American... 70%
 Great American Ball B'r'g. new list... 70%
 Quaker City... 60¢ to 5¢
 Pennsylvania, Jr. Ball Bearing... 60%
 Pennsylvania Golf... 50%
 Pennsylvania Horse... 33¢ to 45¢
 Pennsylvania Pony... 40¢ to 5¢
 Philadelphia:
 Styles M. S. C. K. T... 70¢ to 5¢
 Style A. All Steel... 60¢ to 5¢
 Style E. High Wheel... 70¢ to 10¢ to 5¢
 Drexel and Gold Coin, special list... 50%

Nails—
 Wire Nails and Brads, Papered,
 List July 20, 1899... 85¢ to 10¢ to 90%
 Cut and Wire. See Trade Report.
 Hungarian, Finishing, Upholster-
 ers' &c. See Tacks.

Horse—
 Nos. 6 7 8 9 10
 Anchor... 23 21 20 19 18... 40¢ to 5¢
 Champlain... 28 26 25 24 23... 50%
 Coleman... 13 12 11 10 9... 50%
 New Haven... 23 21 19 18 17... 40¢ to 5¢
 Putnam... 23 21 20 19 18... 33¢ to 4¢
 New Putnam... 19 18 17 16 15... 10¢ to 10¢

Western... 8 1/2¢
 Jobbers' Special Brands...
 per lb. 8 1/4¢ to 10¢

Picture—
 1 1/2 2 2 1/2 3 3 1/2 in.
 Brass H'd... 55 60 70... gro
 Por. Head... 1.10 1.10 1.10... gro

Nippers—
 See Pliers and Nippers.

Nuts—
 Cold Punched: Off list.
 Mfrs. or U. S. Standard.
 Square, Blank... \$5.00
 Hexagon, Blank... \$5.50
 Square, Blank, C. T. & R... \$5.20
 Hexagon, Blank, C. T. & R... \$5.90
 Hot Pressed:
 Mfrs. U. S. or Nar. Gauge Stan'd.
 Square, Blank... \$5.50
 Hexagon, Blank... \$5.90
 Square, Tapped... \$5.40
 Hexagon, Tapped... \$5.80

Oakum—
 Best or Government... 1b. 5 1/4¢ to 6¢
 U. S. Navy... 1b. 5 1/4¢ to 5 1/2¢
 Navy... 1b. 4 1/4¢ to 4 1/2¢
 Plumbers' Spun Oakum... 2 1/4¢ to 2 1/2¢
 In carload lots 1 1/4¢ lb. off, f.o.b.
 New York.

Oil Tanks—
 See Tanks, Oil.

Oilers—
 Brass and Copper... 50¢ to 10¢
 Tin or Steel... 65¢ to 10¢ to 70%
 Zinc... 65¢ to 10¢ to 70%
 Chase or Paragon:
 Brass and Copper... 50¢ to 10¢
 Tin or Steel... 65¢ to 10¢
 Zinc... 65¢ to 10¢
 Malleable, Hammers' Imp'd, Nos.
 11, 12 and 13... 20%
 Malleable, Hammers' Old Pattern,
 Nos. 1, 2 and 3... 50%
 American Tube & Stamping Co.:
 Spring Bottom Cans... 70¢ to 10¢
 Railroad Oilers, &c... 60¢ to 10¢ to 10%

Openers— Can—
 Sprague, Iron Handle... 30¢ to 35¢
 Sprague, Wood Handle... 35¢ to 40¢
 Sardinia Scissors... \$1.75 to \$3.00
 National... 50¢ to 10¢
 Stowell's Sprague... 3/4 doz. 35¢ to 45¢
 Vim Tin Shear and Can Opener,
 3/4 doz., 75¢; per gro., \$7.50

Egg—
 Nickel Plate... 3/4 doz. \$2.00
 Silver Plate... 3/4 doz. \$4.00

Packing—
 Asbestos Packing, Wick and
 Rope... 1b. 14¢ to 16¢

Rubber—
 (Fair quality goods.)
 Sheet, C. I... 8¢ to 10¢
 Sheet, C. O. S... 9¢ to 13¢
 Sheet, C. B. S... 10¢ to 15¢
 Sheet, Pure Gum... 10¢ to 15¢
 Sheet, Red... 40¢ to 50¢
 Jenkins' 90, 100 to 80¢... 25¢ to 25¢ to 5%

Miscellaneous—
 American Packing... 1b. 7¢ to 10¢
 Cotton Packing... 1b. 16¢ to 25¢
 Italian Packing... 1b. 9¢ to 12 1/4¢
 Jute... 1b. 4¢ to 15¢
 Russia Packing... 1b. 8¢ to 11¢

Pails, Creamery—
 S. S. & Co., with gauges—No. 1,
 \$6.25; No. 2, \$6.50 3/4 doz.

Pails, Water, Well, &c.—
 See Buckets.

Pans— Dripping—
 Standard List... 60¢ to 10¢ to 60¢ to 10¢ to 12 1/2%
Fry—
 Common Lipped:
 Nos. 1 2 3 4 5
 Per doz. \$0.75 0.80 0.90 1.10 1.30
Refrigerator, Galva—
 Inch... 12 13 16 18
 Per doz. \$1.95 2.25 2.80 3.15

Roasting and Baking—
 Regal, S. S. & Co., 3/4 doz., Nos. 5,
 \$4.50; 10, \$5.25; 20, \$5.75; 30, \$6.25.
 Savory, 3/4 doz., net, Nos. 200, \$9.00;
 400, \$15.00.
 Simplex, 3/4 gro.:
 No. 40 50 60 140 150 160
 \$30.00 35.00 42.00 34.00 35.00 46.00

Paper—Building Paper
 Asbestos: 1b.
 Building Felt... 6¢
 Mill Board, sheet, 40x40
 in., 1-32 to 1/4 in... 10¢
 Roll Board, 1-16 in. and
 under... 6¢
 Roll Board, 3-32 and 1/4 in. 8¢

Per roll
 Rosin Sized Sheathing: 500 sq. ft.
 Light weight, 25 lbs. to roll...
 35¢ to 40¢
 Medium weight, 30 lbs. to roll...
 40¢ to 45¢
 Heavy weight, 40 lbs. to roll...
 50¢ to 60¢

Black Water Proof Sheathing,
 500 sq. ft., 1 ply, 65¢; 2 ply,
 85¢; 3 ply, \$1.10; 4 ply, \$1.25.
 Deafening Felt, 9, 6 and 4 1/2 sq.
 ft. to 1b. tons... \$3.00 to \$4.00
 Red Rope Roofing, 250 sq. ft.
 per roll... \$1.75

Tarred Paper—
 1 ply (roll 300 sq. ft.), ton...
 \$32.50 to \$35.50
 2 ply, roll 108 sq. ft... 55¢ to 60¢
 3 ply, roll 108 sq. ft... 75¢ to 85¢

Slater's Felt (roll 500 sq. ft.) .75¢
R. M. Stone Surfaced Roofing
(roll 100 sq. ft.) .75¢

Sand and Emery

Flint Paper and Cloth .60¢@1.00¢
Garnet Paper and Cloth .25¢
Emery Paper and Cloth .50¢@1.00¢

Parers—Apple—

Advance 1 doz. \$4.00
Baldwin 1 doz. \$4.00
Bonanza Improved 1 doz. \$4.00
Daisy 1 doz. \$4.00
Dandy 1 doz. \$4.00
Eureka Improved 1 doz. \$4.00
Family Bay State 1 doz. \$4.00
Improved Bay State 1 doz. \$4.00
Little Star 1 doz. \$4.00
New Lightning 1 doz. \$4.00
Reading 72 1 doz. \$4.00
Reading 72 1 doz. \$4.00
Rocking Table 1 doz. \$4.00
Turn Table 72 1 doz. \$4.00
White Mountain 1 doz. \$4.00

Potato—

Saratoga 1 doz. \$7.00
White Mountain 1 doz. \$6.00

Picks and Mattocks—

List Feb 23, 1899 75¢@75¢
Cronk's Handled Garden Mattock
1 doz. \$6.40 33%

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

Brass 60¢@60¢@10¢
Iron, list Nov. 11, '85 60¢@60¢@10¢

Pipe, Cast Iron Soil—

Carload lots.
Standard, 2-6 in. 60¢
Extra Heavy, 2-6 in. 70¢
Fittings 75¢

Pipe, Merchant—

Carload lots.
Steel. Iron.
Blk. Galv. Blk. Galv.
1/4 & 1/2 in. 51¢ 49¢
3/4 & 1 in. 59¢ 57¢
1 & 1 1/2 in. 65¢ 63¢
1 1/2 & 2 in. 73¢ 71¢
2 & 2 1/2 in. 81¢ 79¢
2 1/2 & 3 in. 89¢ 87¢
3 & 3 1/2 in. 97¢ 95¢
4 & 4 1/2 in. 105¢ 103¢
5 & 5 1/2 in. 113¢ 111¢
6 & 6 1/2 in. 121¢ 119¢
7 & 7 1/2 in. 129¢ 127¢
8 & 8 1/2 in. 137¢ 135¢
9 & 9 1/2 in. 145¢ 143¢
10 & 10 1/2 in. 153¢ 151¢
11 & 11 1/2 in. 161¢ 159¢
12 & 12 1/2 in. 169¢ 167¢

Pipe, Vitrified Sewer—

Carload lots.
Standard Pipe and Fittings, 2
to 24 in.:
New England 68¢
New York and New Jersey 71¢
Maryland, Delaware, E. Pa. 75¢
West. Pa. and West Va. 71¢
Virginia 76¢
Ohio, Michigan and Ky. 77¢
Indiana 77¢

NOTE.—Carload lots are generally delivered.

Pipe, Stone—

Edwards' Nested Stone Pipe:
C. L. L. C. L.
5 in., per 100 joints \$7.00 8.50
6 in., per 100 joints 7.50 9.50
7 in., per 100 joints 8.50 9.50

Planes and Plane Irons—

Wood Planes—
Bench, first qual. 40¢@10¢
Bench, second qual. 50¢@10¢
Molding 33¢@10¢
Bailey's (Stanley R. & L. Co.) 40¢
Chapin-Stephens Co.:
Bench, First Quality 40¢@10¢
Bench, Second Quality 50¢@10¢
Molding 33¢@10¢
Toy and German 40¢@10¢
Chapin's 60¢
Ohio Tool Co.:
Bench, First Quality 40¢@10¢
Bench, Second Quality 50¢@10¢
Molding 33¢@10¢
Adjustable Wood Bottom 60¢
Union 60¢

Iron Planes—

Bailey's (Stanley R. & L. Co.) 40¢
Chapin's Iron Planes 50¢@10¢
Miscellaneous Planes (Stanley R. & L. Co.) 35¢
Ohio Tool Co.'s Iron Planes 60¢
Sargent's 60¢@10¢
Union 60¢

Plane Irons—

Wood Bench Plane Irons 25¢@10¢@30¢
Buck Bros. 30¢
Chapin-Stephens Co. 30¢@10¢
Ohio Tool Co. 30¢
Stanley R. & L. Co. 35¢
Union 50¢
L. & J. White 20¢@25¢

Planters, Corn, Hand—

Kohler's Eclipse 1 doz. \$8.50

Plates—

Felco 1 lb. 3¢@14¢
Self-Sealing Pie Plates (S. & Co.) 1 doz. \$2.00 50¢

Pliers and Nippers—

Button Pliers 75¢@10¢@10¢
Gas Burner, per doz. 5 in. \$1.25
@ \$1.30; 6 in. \$1.45 @ \$1.50.
Gas Pipe 7 8 10 12 in.
\$2.00 \$2.25 \$3.00 \$3.75
Acme Nippers 50¢@50¢
Cronk & Carrier Mfg. Co.:
American Button 75¢@10¢
Cronk's 60¢
Stub's 60¢
Combination and others 35¢
Heller's Farriers' Nippers, Pincers
and Tools 40¢@10¢@10¢@10¢
P. S. & W. Tinner's Cutting Nip-
pers 40¢
Swedish Side End and Diagonal Cut-
ting Pliers 50¢
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40¢

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels 30¢@10¢@10¢
Chapin's Imp. Brass Cor. 10¢@10¢@10¢
Pocket Levels 30¢@10¢@10¢
Diston's Plumbs and Levels 70¢
Diston's Pocket Levels 70¢
C. E. Jennings & Co.'s Iron 35¢

C. E. Jennings & Co.'s Iron, Adjust-
able 40¢@10¢
Stanley R. & L. Co. 45¢
Stanley's Duplex 35¢
Woods' Extension 30%

Poachers, Egg—

Buffalo Steam Egg Poachers, 1 doz.,
No. 1, \$6.00; No. 2, \$9.00; No. 3,
\$9.00; No. 4, \$12.00 50%

Points, Glaziers—

Bulk and 1-lb. papers, 1 lb. 8¢@9¢
1/2-lb. papers 1 lb. 9¢@10¢
1/4-lb. papers 1 lb. 9¢@10¢

Pokes, Animal—

Ft. Madison Hawkeye 1 doz. \$3.25
Ft. Madison Western 1 doz. \$4.00

Police Goods—

Manufacturers' Lists 25¢@25¢45¢

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder),
each, \$1.25; 10 lb can, \$2.00; 20 lb
can (cake), each, \$2.50; 1 doz. \$24.00.
Prestoline Liquid, No. 1 (1/2 pt.),
1 doz. \$3.00; No. 2 (1 qt.), \$9.75 40¢
Prestoline Paste 40¢
U. S. Metal Polish Paste, 3 oz.
boxes, 1 doz. \$6.00; 1 doz. \$4.50.
1/2 lb boxes, 1 doz. \$1.25; 1 lb
boxes, 1 doz. \$2.25.
U. S. Liquid, 8 oz. cans, 1 doz.,
\$1.25; 1 doz. \$12.00.
Barkeepers' Friend Metal Polish, 1
doz., \$1.75; 1 doz. \$18.00.
Wynn's White Silk, 1/2 pt. cans, 1
doz. \$2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans,
1 doz. \$10.00.
Black Eagle, Liquid, 1/2 pt. cans,
1 doz. \$7.50.
Black Jack Paste, 1/2 lb cans, 1 doz. \$9.00.
Black Kid Paste, 5 lb cans, each, \$6.65.
Ladd's Black Beauty Liquid, per
100 lbs \$6.75 19¢
Joseph Dixon's, 1/2 gr. \$5.75 19¢
Dixon's Plumbago 1 lb. 8¢
Fireside 1/2 gr. \$2.50
Gem, 1/2 gr. \$4.50 10¢
Japanese 1/2 gr. \$3.50
Jet Black 1/2 gr. \$3.50
Peelless Iron Enamel, 10 lb cans,
1 doz. \$1.50

Wynn's:
Black Silk, 5 lb pail each 70¢
Black Silk, 1/2 lb box 1 doz. \$1.00
Black Silk, 1/2 oz. box 1 doz. \$0.75
Black Silk, 1/4 pt. lid 1 doz. \$1.00

Poppers, Corn—

1 qt., Square 1 doz. \$9.00
1 qt., Round 1 doz. \$10.00
1/2 qt., Square 1 doz. \$11.00
2 qt., Square 1 doz. \$13.00

Post Hole and Tree Au- gers and Diggers—

See also Diggers, Post Hole, etc.

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢;
6 ft., 46¢; 6 1/2 ft., 51¢.
Steel Hitching Posts each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled 40¢
Tinned 35¢

Powder—

In Canisters:
Duck, 1 lb. each 45¢
Fine Sporting, 1 lb. each 75¢
Rifle, 1/2 lb. each 15¢
Rifle, 1-lb. each 25¢
In Kegs:
12 1/2-lb. kegs \$3.50
25-lb. kegs \$4.50
King's Semi-Smokeless:
Keg (25 lb bulk) \$6.50
Half Keg (12 1/2 lb bulk) \$3.50
Quarter Keg (6 1/2 lb bulk) \$1.90
Case 24 (1 lb cans bulk) \$8.50
Half case (1 lb cans bulk) \$4.50
King's Smokeless:
Shot Gun Rifle \$12.00 \$15.00
Half Keg (12 1/2 lb bulk) 6.25 7.75
Quarter Keg (6 1/2 lb bulk) 3.25 4.00
Case 24 (1 lb cans bulk) 14.00 17.00
Half case 12 (1 lb c. bk.) 7.25 8.75
Robin Hood Smokeless Shot Gun 50¢@20¢

Presses—

Fruit and Jelly—
Enterprise Mfg. Co. 20¢@25¢

Seal Presses—

Morrill's No. 1, 1 doz. \$20.00 80¢

Pruning Hooks and Shears

See Shears.

Pullers, Cork—

Invincible Cork Puller \$21.00

Pullers, Nail—

Cyclops 50¢
Miller's Falls, No. 3, 1 doz. \$12.00 35¢@10¢
Morrill's No. 1, Nail Puller, 1 doz. \$20.00 80¢
Pearson No. 1, Cyclone Spike Puller, each \$30.00, 1 doz. \$2.00 10¢@10¢
Pelican, 1 doz. \$2.00 10¢@10¢
Scranton, Case Lots:
No. 2B (large) \$5.50
No. 3B (small) \$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots \$4.00
Diamond B, No. 3, case lots \$4.50
Giant No. 1, 1 doz. \$18; No. 2, \$16.50; No. 3, \$15 40¢
Parrot Tack and Stub Puller, 1 doz. \$5.00 15¢; 1 doz. \$6.00

Pulleys, Single Wheel—

1/2 in. 1 1/2 2 3
1 in. 1 1/2 2 3
1 1/2 in. 1 1/2 2 3
2 in. 1 1/2 2 3
3 in. 1 1/2 2 3
4 in. 1 1/2 2 3
5 in. 1 1/2 2 3
6 in. 1 1/2 2 3
8 in. 1 1/2 2 3
10 in. 1 1/2 2 3
12 in. 1 1/2 2 3
14 in. 1 1/2 2 3
16 in. 1 1/2 2 3
18 in. 1 1/2 2 3
20 in. 1 1/2 2 3
22 in. 1 1/2 2 3
24 in. 1 1/2 2 3
26 in. 1 1/2 2 3
28 in. 1 1/2 2 3
30 in. 1 1/2 2 3
32 in. 1 1/2 2 3
34 in. 1 1/2 2 3
36 in. 1 1/2 2 3
38 in. 1 1/2 2 3
40 in. 1 1/2 2 3
42 in. 1 1/2 2 3
44 in. 1 1/2 2 3
46 in. 1 1/2 2 3
48 in. 1 1/2 2 3
50 in. 1 1/2 2 3
52 in. 1 1/2 2 3
54 in. 1 1/2 2 3
56 in. 1 1/2 2 3
58 in. 1 1/2 2 3
60 in. 1 1/2 2 3
62 in. 1 1/2 2 3
64 in. 1 1/2 2 3
66 in. 1 1/2 2 3
68 in. 1 1/2 2 3
70 in. 1 1/2 2 3
72 in. 1 1/2 2 3
74 in. 1 1/2 2 3
76 in. 1 1/2 2 3
78 in. 1 1/2 2 3
80 in. 1 1/2 2 3
82 in. 1 1/2 2 3
84 in. 1 1/2 2 3
86 in. 1 1/2 2 3
88 in. 1 1/2 2 3
90 in. 1 1/2 2 3
92 in. 1 1/2 2 3
94 in. 1 1/2 2 3
96 in. 1 1/2 2 3
98 in. 1 1/2 2 3
100 in. 1 1/2 2 3

Inch 1 1/2 2 3
Side, doz. \$0.25 1/2 1 1/2 2 3
Inch 1 1/2 1 1/2 2 3
Stowell's:
Ceiling or End, Anti-Friction 60¢@10¢
Dumb Waiter, Anti-Friction 60¢@10¢
Electric Light 60¢@10¢
Side, Anti-Friction 60¢@10¢

Sash Pulleys

Common Frame; Square or
Round End, per doz. 1 1/2 2 3
2 in. 1 1/2 2 3
Auger Mortise, no Face Plate,
per doz. 1 1/2 2 3
Acme 1 1/2 in. 1 1/2 2 in. 1 1/2
Fox-All-Steel, Nos. 3 and 7, 2 in. 1 1/2
Grand Rapids All Steel Noiseless 50¢
Ideal 70¢@10¢
Niagara 1 1/2 in. 1 1/2 2 in. 1 1/2
No. 26, Troy, 1 1/2 in. 1 1/2 2 in. 1 1/2
Star 1 1/2 in. 1 1/2 2 in. 1 1/2
Tackle Blocks—See Blocks.

Pumps—

Cistern 60¢@60¢@10¢
Pitcher Spout 80¢@80¢@10¢
Wood Pumps, Tubing, etc. 45¢@50¢
Barnes Dbl Acting (low list) 50¢
Barnes' Pitcher Spout 75¢@10¢
Contractors' Rubber Diaphragm No.
2, B. & L. Block Co. \$16.00
Daisy Spray Pump 1 doz. \$6.75
Flint & Walling's, Fast Mail Hand,
(low list) 55¢
Flint & Walling's Fast Mail (low
list) 55¢
Flint & Walling's Tight Top Pitcher 80¢
National Specialty Mfg. Co., Measur-
ing, 60.00 30¢
Mechanical Sprayer \$6.00
Myers' Pumps (low list) 50¢
Myers' Power Pumps 50¢@10¢
Myers' Spray Pumps 50¢@10¢

Pump Leathers—

Plunger and Lower Valve—Per
gro.:
Inch 2 1/2 2 1/2 2 1/2 2 1/2
2 1/2 2 1/2 2 1/2 2 1/2
Inch 3 3/4 3 3/4 3 3/4 3 3/4
3 3/4 3 3/4 3 3/4 3 3/4
Plunger Cup Leathers—Per 100:
Inch 2 1/2 3 3 1/2 4
2 1/2 3 3 1/2 4

Punches—

Saddlers' or Drive, good 1 doz. \$0.50@75¢
Spring, single tube, good qual-
ity \$1.75@2.00

Revolving (4 tubes)

Bemis & Call Co.'s Cast St'l Drive 50¢
Bemis & Call Co.'s Check 55¢
Morrill's Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 50¢
Hercules, 1 die, each \$5.00 50¢
Niagara Hollow Punches 40¢
Niagara Solid Punches 55¢@10¢
Steel Screw, B. & K. Mfg. Co. 50¢
Tinner's Hollow P., S. & W. Co. 40¢
Tinner's Solid P., S. & W. Co. 60¢
Zox, \$1.44 60¢

Rail—Barn Door, &c.—

Cast Iron Barn Door; Flange
Screw Holes for Rd. Groove
Wheels:
1/2 3/4 1 in.
\$2.50 \$3.00 \$4.40 100 feet.
Angular for Sq. Groove Wheels:
Small. Med. Large.
\$2.00 \$2.70 \$3.60 100 feet.
Sliding Door, Painted Iron 2 1/2@2 3/4¢
Sliding Door, Wrought Brass,
1 1/2 in. lb. 36¢ 30¢
Alma Mfg. Co.:
No. 1, Portable Hgr. Track, 1/2 ft. 5 1/4¢
No. 2, Reliable Hgr. Track, 1/2 ft. 7¢
Cronk's:
Double Braced Steel Rail, 1/2 ft. 2 1/2¢
O. N. T. Rail 2 1/2¢
Griffin's:
xxx, 100 ft., 1 x 3-16 in., \$3.00;
1 1/2 x 3-16 in. 3.50.
Hinged Hanger, 100 ft., 1 x 3-16
in., \$3.10; 1 1/2 x 3-16 in., \$3.60.
Lane's:
Hinged Track, 100 ft., 1 in., \$3.70;
O. N. T., 100 ft., 1 in., \$2.75; 1 1/2
in., \$3.50; 1 1/2 in., \$4.00.
Standard, 1 1/2 in. 100 ft. \$4.00
Lawrence Bros.:
100 ft. No. 201, \$4.00; No. 202, \$4.00
No. York, 1 x 3-16 in., 100 ft. \$2.75
McKinney's:
Hinged Hanger Rail, 1/2 ft., 1 1/2 50¢
None Better 1/2 ft. 3 1/4¢
Standard 1/2 ft. 4¢
Myers' Stayon Track 60¢@10¢
Richard Mfg. Co.:
Common 1 x 3-6 in., \$2.25; 1 1/2 x
3-16, \$2.50; 1 1/2 x 3-16, \$2.75.
Special Hinged Hanger Rail 60¢@10¢
Lag Screw Rail, No. 65 50¢
Gauge Trolley Track, No. 31,
1 1/2; No. 32, 1 1/2; No. 33, 20¢.
Safety Door Hanger Co.'s Storm
King Safety 60¢
Safety Door Hanger Co.'s U. S.
Standard 60¢
Stowell's:
Cast Rail, Plain 1/2 ft. 1 1/4¢
Wrought Bracket, 1-3-16 in., 1/2 ft. 3¢
Wrought Bracket, 1 1/2 x 3-16, 1/2 ft. 4¢
Sweet's Hylo, 1/2 ft. 1 1/4 60¢
P. L. B. Steel Rail 100 ft. \$3.00
No. 0, 1 x 3-16 100 ft. \$2.75

Rakes—

NOTE.—Manufacturers are
selling from the list of September
1, 1904, but many jobbers are still
using list of August 1, 1899, or
selling at net prices.
Fort Madison Red Head Lawn \$3.25
Fort Madison Blue Head Lawn \$2.70
Jackson Lawn, 29 and 30 teeth \$4.25
Cronk's:
New Champion Garden, 1 doz., 12
teeth, \$15.00; 14, \$16.50; 16, \$18.00 75%

Victor Garden, 12 teeth 12
\$15.00; 14, \$16.50; 16, \$18.00 50%
Queen City Lawn, 1 doz., 20 teeth,
\$3.45; 24, \$3.60 net.
Anticlog Lawn, 1 doz. \$4.00
Malleable Garden 70¢@10¢
Kohler's:
Lawn Queen, 20-tooth 1 doz. \$3.60
Lawn Queen, 24-tooth 1 doz. \$3.45
Paragon, 20-tooth 1 doz. \$2.75
Paragon, 24-tooth 1 doz. \$2.00
Steel Garden, 1

Thread No. 2, 1/4-in. & up, lb. 5 1/2¢
Old Colony Manila Transmission
Rope 10 lb 17 1/2¢

Wire Rope—

Galvanized 12 1/2¢
Plain 50¢

Ropes, Hammocks—

Covert Mfg. Co.:
Jute 50¢
Sisal 30¢
Covert Saddlery Works 60¢

Rulers, Desk—

Stimpson & Son:
Boxwood and Maple 30¢

Rules—

Boxwood 60¢
Ivory 35¢
Chapin-Stephens Co.:
Boxwood 60¢
Flexfold 27 1/2¢
Ivory 35¢
Miscellaneous 50¢
Combination 55¢
Stationery 10¢
Keuffel & Esser Co.:
Folding, Wood 35¢
Folding, Steel 40¢
Lufkin's Steel 50¢
Lufkin's Lumber 60¢
Stanley R. & L. Co.:
Boxwood 62 1/2¢
Ivory 45¢
Miscellaneous 90¢
Zig Zag 40¢
Zig Zag, Pin Joint 42 1/2¢
Upson Nut Co.:
Boxwood 60¢
Ivory 35¢

Sash Balances—

See Balance, Sash.

Sash Locks—

See Locks, Sash.

Sash Weights—

See Weights, Sash.

Sausage Stuffers or Fillers

See Stuffers or Fillers, Sausage.

Saw Frames—

See Frames, Saw.

Saw Sets—

See Sets, Saw.

Saw Tools—

See Tools, Saw.

Saws—

Atkins:
Circular 50¢
Band 50¢
Cross Cuts 50¢
Mulay, Mill and Drag 50¢
One-Man Saw 50¢
Wood Saws 50¢
Hand, Compass, &c. 40¢
Chapin-Stephens Co.:
Turning Saws and Frames 30¢
Diamond Saw & Stamping Works 50¢
Sterling Kitchen Saws 50¢
Diston's:
Circular, Solid and Ins'ted Tooth 50¢
Band, 2 to 14 in. wide 60¢
Band, 1/4 to 1 1/2 in. wide 60¢
Crosscuts 50¢
Narrow Crosscuts 50¢
Mulay, Mill and Drag 50¢
Framed Woodsaws 50¢
Woodsaw Blades 35¢
Woodsaw Rods 25¢
Hand Saws, Nos. 12, 9, 9, 16, 4100 25¢
Da, 120, 76, 71, 8 25¢
Hand Saws, Nos. 7, 107, 107 1/2, 9 30¢
Combination 30¢
Compass, Key Hole, &c. 25¢
Butcher Saws and Blades 35¢
C. E. Jennings & Co.'s:
Back Saws 30¢
Butcher Saws 30¢
Compass and Key Hole Saws 35¢
Framed Wood Saws 30¢
Hand Saws 20¢
Wood Saw Blades 30¢
Millers Falls:
Butcher Saws 15¢
Star Saw Blades 15¢
Peace & Richardson's Hand Saws 30¢
Simonds:
Circular Saws 50¢
Crescent Ground Cross Cut Saws 35¢
One-Man Cross Cuts 35¢
Gang Mill, Mulay and Drag Saws 50¢
Band Saws 50¢
Back Saws 25¢
Butcher Saws 35¢
Hand Saws 25¢
Hand Saws, Bay State Brand 35¢
Compass, Key Hole, &c. 25¢
Wood Saws 35¢
Springfield Mach. Screw Co.:
Diamond Kitchen Saws 40¢
Butcher Saws 35¢
Wheeler, Madden & Clemson Mill Co.'s Cross Cut Saws 50¢

Hack Saws—

Atkins' Hack Saw Blades A & A 25¢
Diston's:
Concave Blades 25¢
Keystone 40¢
Hack Saw Frames 30¢
Fitchburg File Works, The Best 35¢
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 40¢
Hack Saws, Nos. 175, 180, complete 40¢
Goodell's Hack Saw Blades 40¢
Griffin's Hack Saw Frames 35¢
Griffin's Hack Saw Blades 35¢
Springfield Mach. Screw Co.:
Diamond Hack Saw Frames 35¢
Star Hack Saws and Blades 15¢
Sterling Hack Saw Blades 30¢
Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00 10¢

Scroll—

Barnes' No. 1, \$15.00 25¢
Barnes' Scroll Saw Blades 40¢
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$15.00 25¢
Lester, complete, \$10.00 15¢
Rogers, complete, \$4.00 15¢

Scalers, Fish—

Covert's Saddlery Works 60¢

Scales—

Family, Turnbull's 50¢
Counter:
Hatch, Platform, 1/2 oz. to 4 lbs. 50¢
Two Platforms, 1/2 oz. to 4 lbs. 16.00¢
Union Platform, Plain \$1.70; Stpd. \$1.85 at \$2.15
Chatillon's:
Eureka 25¢
Favorite 40¢
Crocker's Trip Scales 50¢
Chicago Scale Co.:
The "Little Detective" 25¢
Union or Family No. 2 60¢
Portable Platform (reduced list) 50¢
Wagon or Stock (reduced list) 25¢
"The Standard" Portables 50¢
"The Standard" R. R. and Wagon 50¢

Scrapers—

Box, 1 Handle 2.00¢
Box, 2 Handle 2.50¢
Ship, Light, \$2.00; Heavy, \$4.50
Adjustable Box Scraper (S. R. & L.) 15¢
Chapin-Stephens Co., Box 30¢

Screens, Window and**Frames—**

Air Line Pattern Screens 60¢
Flyer Pattern Screens 60¢
Maine Screen Frames 40¢
Perfection Screens 60¢
Phillips' Screen Frames 60¢
See also Doors.

Screws—Bench and Hand

Bench, Iron, doz., 1 in., \$2.50¢
2 1/2; 1 1/2, \$3.00; 3 1/2; 1 1/2, \$3.50 at \$3.75
Bench, W'd, Beech, doz. 30¢
Hand, Wood 30¢
R. Bliss Mfg. Co., Hand 30¢
Chapin-Stephens Co., Hand 30¢
Ohio Tool Co., Bench and Hand 30¢

Coach, Lag and Hand Rail—

Lag, Cone Point, list Oct. 1, '99 75¢
Coach, Gimlet Point, list Oct. 1, '99 75¢
Hand Rail, list Jan. 1, '81 70¢

Jack Screws

Standard List 75¢
Millers Falls 50¢
Millers Falls, Roller 50¢
P. S. & W. 50¢
Sargent 70¢
Swett Iron Works 75¢

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron 50¢
Flat or Round Head, Brass 50¢

Set and Cap—

Set (Iron), net advance over Iron 25¢
Sq. Hd. Cap 75¢
Hex. Hd. Cap 75¢
Rd. Hd. Cap 60¢
Fillister Hd. Cap 60¢

Wood—

List July 23, 1903:
Flat Head, Iron 87¢
Round Head, Iron 85¢
Flat Head, Brass 85¢
Round Head, Brass 80¢
Flat Head, Bronze 77¢
Round Head, Bronze 75¢
Drive Screws 87¢

Scroll Saws—

See Saws, Scroll.
Prices announced for next season:
Clipper Pattern, Grass 60¢
Full Polished, Clipper 60¢
Grain 80¢
Clipper, Grain 80¢
Weed and Bush 60¢

Seeders, Raisin—

Enterprise 25¢
Sets—Awl and Tool:
Alken's Sets, Awl and Tools 50¢
Fray's Adj. Tool Handles, No. 1, \$12; No. 2, \$18; No. 3, \$12; No. 4, \$9; No. 5, \$7 50¢
C. E. Jennings & Co.'s Model Tool Holders 30¢
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 2, \$18; No. 3, \$12; No. 4, \$9; No. 5, \$7 50¢
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. \$7.50
Ft. Madison Three Flows Hoe, Rake and Shovel 90¢

Sets, Nails—

Octagon 30¢
Buck Bros 27 1/2¢
Cannon's Diamond Point, \$1.25 25¢
Mayhew's 30¢
Snell's Cannon's Diamond Point 30¢
Snell's Cor'gated, Cup Pt. 30¢
Snell's Knurled, Cup Pt. 30¢
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. \$7.50

Rivet—

Regular list 75¢

Saw—

Alken's:
Genuine 50¢
Imitation 50¢
Alken's:
Adjustable 40¢
Bemis & Call Co.'s:
Cross Cut 30¢
Plate 20¢
Diston's Star and Monarch 25¢
Morrill's No. 1, \$15.00 25¢
Nos. 3 and 4, Cross Cut, \$20.00 25¢
No. 5, Mill, \$30.00 50¢
No. 10, 11, 95, \$15.00 50¢
No. 1 Old Style, \$10.00 50¢
Special, \$16.25 50¢
Giant Royal Cross Cut 30¢
Royal, Hand, 1 doz. \$4.50 10¢
Taintor Positive 1 doz. \$8.75 10¢

Shaving

Fox Shaving Sets, No. 30 30¢

Chicago Wheel & Mfg. Co. 70¢

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones 15¢
Mounted Kitchen Sand Stone 15¢
Natural Grit Carving Knife 15¢
Quick Cut Emory Carving Knife 15¢
Quick Edge Pocket Knife 15¢
Hones, 1 doz. \$2.50 10¢

Shaves, Spoke—
Iron 1.10¢
Wood 1.15¢

Bailey's (Stanley R. & L. Co.) 45¢
Razor Edge (Stanley R. & L. Co.) 35¢
Chapin-Stephens Co. 30¢
Goodell's 15¢
Wood's F1 and F2 50¢

Shears—
Best 16.00 18.00 20.00 gro.
Good 13.00 15.00 17.00 gro.
Cheap 5.00 6.00 7.00 gro.

Straight Trimmers, &c.:
Best quality Jap. 70¢
Best quality, Nickel 60¢
Fair quality, Jap. 80¢
Fair quality, Nickel 75¢
Tailors' Shears 40¢
Acme Cast Shears 40¢
Heinrich's Tailors' Shears 10¢
Wilkinson's Hedge, 1900 list 45¢
Wilkinson's Branch, Lawn & Border 40¢
Wilkinson's Sheep, 1900 list 50¢

Tinners' Snips—
Steel Blades 20¢
Steel Laid Blades 40¢
Forged Handles, Steel Blades, Berlin 50¢
Heinrich's Snips 40¢
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in. Snips 40¢
P. S. & W. Forged Handles 20¢

Pruning Shears—
Cronk's Hand Shears 33 1/2¢
Cronk's Wood Handle Shears 33 1/2¢
Diston's Combined Pruning Hook and Saw 18.00 25¢
Diston's Pruning Hook 12.00 25¢
John T. Henry Mfg. Co.:
Pruning Shears, all grades 40¢
Orange Shears 50¢
Grass & Tree Pruning 75¢
P. S. & W. Co. 33 1/2¢

Sheaves—Sliding Door—
Stowell's Anti-Friction 50¢
Patent Roller, Hatfield's, Sargent's list 70¢
Reading 40¢
R. & E. list 33 1/2¢
Sargent's list 50¢

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge 65¢
Paper Shells, Empty:
Alme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge 25¢
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20¢
Climax, Union, League, New Rival, 10 and 12 gauge 25¢
Climax, Union, League, New Rival, 14, 16 and 20 gauge 20¢
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge 33 1/2¢
Robin Hood, Low Brass 20¢
Robin Hood, High Brass 30¢

Shells, Loaded—
Loaded with Black Powder 10¢
Loaded with Smokeless Powder, medium grade 40¢
Loaded with Smokeless Powder, high grade 40¢
Robin Hood Smokeless Powder 50¢
Robins Hood Low Brass 50¢
Comets, High Brass 50¢

Shoes, Horse, Mule, &c.—
Iron 1.00¢
Steel 1.00¢
Burden's, all sizes 30¢

Shot—
Drop, up to B, 25-lb. bag 1.65¢
Drop, B and larger 1.90¢
Ruck, 25-lb. bag 1.90¢
Chilled, 25-lb. bag 1.90¢

Shovels and Spades—
Association List, Nov. 15, 1902 40¢

Sieves and Sifters—
Hunter's Imitation 10.00¢
Hunter's Genuine 12.00¢
Buffalo Metallic Blued, S. S. Co., 14 1/2 16 18 20 13.20 13.50 13.80 14.10
Shaker (Barber's Pat.) Flour Sifters 2.00¢

Sieves, Seamless Metallic—
Mesh 14 16 18 20
Iron Wire 1.05 1.10 1.15 1.20 1.25
Tinned Wire 1.15 1.20 1.25 1.30

Sieves, Wooden Rim—
Nestled, 10, 11 and 13 Inch
Mesh 18, Nestled 2.00¢
Mesh 20, Nestled 2.00¢
Mesh 24, Nestled 2.00¢

Sinks, Cast Iron—
Standard list 60¢
Barnes' low list 60¢

NOTE—There is not entire uniformity in lists used by jobbers.

Skins, Wagon—

Cast Iron 80¢
Steel 40¢

Slates, School—

Factory Shipments.
"D" Slates 50¢
Eureka, Unexcelled Noiseless 60¢

Victor A, Noiseless 60¢

Slaw Cutters—See Cutters.**Snaps, Harness—**

German 40¢
Covert Mfg. Co.:
Derby 30¢
High Grade 35¢
Jockey 35¢
Trojan 30¢
Yankee 30¢
Yankee Roller 30¢

Covert's Saddlery Works:
Crown 60¢
German 60¢
Model 60¢
Triumph 60¢
Oneida Community:
Solid Swivel 60¢
Sargent's Patent Guarded 60¢

Snaths—

Scythe 50¢

Snips, Tinner's—See Shears.**Spoons and Forks—****Silver Plated—**

Good Quality 50¢
Cheap 60¢
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton 40¢
Rogers & Bros., William Rogers Eagle Brand 50¢
Anchor Rogers Brand 60¢
Wm. Rogers & Son 60¢

Miscellaneous—

German Silver 60¢
Cattaraugus Cutlery Co.:
Seneca Silver 50¢

Tinned Iron—

Teas 45¢
Tables 50¢

Springs—Door—

Chicago (Coil) 40¢
Gem (Coil) 20¢
Pullman (Coil) 25¢
Reliance (Coil) 40¢
Star (Coil) 30¢
Torrey's Rod, 30 in. 50¢
Victor (Coil) 50¢

Carriage, Wagon, &c.—

1 1/2 in. and Wider: Per lb.
Black 40¢
Half Bright 40¢
Bright 40¢
Painted Steel Springs:
1 1/2 x 2 x 26 42¢
1 1/2 x 3 x 28 70¢

Sprinklers, Lawn—

Enterprise 25¢
Philadelphia No. 1, 1 doz. \$12; No. 2, \$15; No. 3, \$24 30¢

Squares—

Nickel plated—List Jan. 5, 1900:
Steel and Iron 75¢
Rosewood Hdl. Try Square and T-Bevels 60¢
Iron Hdl. Try Squares and T-Bevels 40¢
Diston's Try Sq. and T-Bevels 70¢
Winterbottom's Try and Miter, No. 1, 40¢; No. 2 50¢

Squeezers, Lemon

Wood, Common, gro., No. 0, \$5.25 at \$5.50; No. 1, \$6.25 at \$6.50.
Wood, Porcelain Lined:
Cheap 1.00¢
Good Grade 1.25¢
Tinned Iron 1.75¢
Iron, Porcelain Lined 1.75¢

Staples—

Barbed Blind 60¢
Electricians' Association list 80¢
Fence Staples, Plain, \$2.25; Galvanized 2.50¢
Poultry Netting Staples 3.50¢
Grand Crossing Tack Co.'s list 80¢

Steels, Butchers—

Dick's 30¢
Foster Bros. 30¢
C. & A. Hoffmann's 30¢

Steelyards—

30¢

Stocks and Dies

Blacksmiths' 50¢
Curtis Rev'le Ratchet Die Stock 25¢
Derby Screw Plates 25¢
Green River 25¢
Lightning Screw Plate 25¢
Little Giant 25¢
Reece's New Screw Plates 25¢

Stoners, Cherry—

Enterprise 25¢

Stones—Oil, &c.

Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit 60¢
Gem Corundum Axe, Single 60¢
Double Grit 60¢
Gem Corundum Slips 60¢
Pike Mfg. Co., 1904 list:
Arkansas St. No. 1, 3 to 5 in. \$2.00 50¢
Arkansas St. No. 1, 5 1/2 to 8 in. \$3.50 50¢
Arkansas Slips No. 1 4.00 50¢
Lily White Washita, 4 to 8 in. 60¢
Rory Red Washita, 4 to 8 in. 60¢
Washita St. No. 1, 4 to 8 in. 40¢
Washita St. No. 2, 4 to 8 in. 30¢
Lily White Slips 30¢
Rory Red Slips 30¢
Washita Slips, Extra 30¢
Washita Slips, No. 1 70¢

Washita Slips, No. 2.....	40¢
India Oil Stones (entire list).....	33%
Quickcut Emery and Corundum Oil Stone, Double Grit.....	33%
Quickcut Emery and Corundum Ax Stone, Double Grit.....	33%
Quickcut Emery Rubbing Bricks.....	33%
Hindustan No. 1, B's in. 10" B 10"	
Hindustan No. 1, B's in. 10" B 10"	
Axe Stones (all kinds).....	28
Turkey Oil Stones, Extra, 5 to 8 in.....	80¢
Queer Creek Stones, 4 to 8 in.....	20¢
Queer Creek Slips.....	40¢
Sand Stone.....	6¢

Scythe Stones—

Chicago Wheel & Mfg. Co.: Gem Corundum, 10 in., \$8.00 gro., 12 in., \$10.00	
Norton Emery Scythe Stones: Less than gross lots.....	gro. \$9.00
One gross or more.....	gro. \$7.20
Lots of 10 gross or more.....	gro. \$6.00
Pike Mfg. Co. list:	
Black Diamond S. S. 8" gro.	\$12.00
Lamolle S. S. 8" gro.	\$11.00
White Mountain S. S. 8" gro.	\$9.00
Green Mountain S. S. 8" gro.	\$6.00
Extra Indian Pond S. S. 8" gro.	\$7.50
No. 1 Indian Pond S. S. 8" gro.	\$7.00
No. 2 Indian Pond S. S. 8" gro.	\$4.50
Leader Red End S. S. 8" gro.	\$4.50
Quick Cut Emery.....	gro. \$10.00
Pure Corundum.....	gro. \$18.00
Crescent.....	\$7.00
Emery Scythe Rifles, 1 Coat.....	\$8
Emery Scythe Rifles, 2 Coat.....	\$10
Emery Scythe Rifles, 4 Coat.....	\$12
Balance of 1904 list 33%	

Stoppers, Bottle—

Victor Bottle Stoppers.....	gro. \$2.00
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Stops—Bench—

Millers Falls.....	15¢-10¢
Morrill's, No. 1.....	\$1.00
Morrill's, No. 2.....	\$1.25

Door—

Chapin-Stephens Co.....	60¢-60¢-10¢
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Plane—

Chapin-Stephens Co.....	20%
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Straps—Box—

Cary's Universal, case lots.....	20¢-10¢-10¢
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Hame—

Covert's Saddlery Works.....	60¢-10¢
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Stretchers, Carpet—

Cast Iron, Steel Points, doz.	60¢-60¢-10¢
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Socket.....	doz. \$1.00
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Excelsior Stretcher and Tack Hammer Combined, 1 doz.	\$6.00.....20%
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Stuffers, Sausage—

Enterprise Mfg. Co.....	25¢-25¢-7½¢
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National Specialty Co., list Jan. 1, 1902.....	30¢-25¢
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Sweepers, Carpet—

National Sweeper Co.: Louis XV, Roller Bearing, Gold Plated.....	\$120.00
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Heppelwhite, Roller Bearing, Sil- ver Plated.....	\$72.00
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Sheraton, Roller Bearing, N'kel \$60.00	
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Ye Mission, Roller Bearing, Oxid- ized Coppered.....	\$36.00
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Transparent, Roller Bearing, Plate Glass top, Nickel.....	\$36.00
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National Queen, Roller Bearing, Fancy Veneers.....	\$27.00
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Loyal, Roller Bearing, Veneers, Nickel.....	\$26.00
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Triple Medal, Roller Bearing, Nickel.....	\$24.00
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Marion, Roller Bearing, N'kel \$24.00	
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Marion Queen, Roller Bearing, Nickel.....	\$24.00
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Monarch, Roller Bearing, N'kel \$22.00	
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Monarch, Roller Bearing, Jap. \$22.00	
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Perpetual, Regular B'r'gs, N'kel \$20.00	
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Perpetual, Regular B'r'gs, Jap. \$18.00	
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Monarch Extra (17 in. case), Roller Bearing, Nickel.....	\$36.00
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Monarch Extra (17 in. case), Roller Bearing, Japanned.....	\$33.00
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Auditorium (26 in. case), Roller Bearing, Nickel.....	\$54.00
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Mammoth (30 in. case), Roller Bearing, Nickel.....	\$60.00
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NOTE—Rebates: 50¢ per dozen on three-dozen lots; \$1 per dozen on five- dozen lots; \$2 per dozen on ten-dozen lots; \$3.50 per dozen on twenty-five-dozen lots.	
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Tacks, Finishing Nails, &c.

New List, May 1, 1905.	
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American Carpet Tacks.....	90¢-57½¢
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American Cut Tacks.....	90¢-57½¢
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Suedes Cut Tacks.....	90¢-57½¢
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Suedes Upholsterers' Tacks.....	90¢-57½¢
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Gimp Tacks.....	90¢-57½¢
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Lace Tacks.....	90¢-57½¢
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Trimmers' Tacks.....	90¢-57½¢
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Looking Glass Tacks.....	65%
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Bill Posters' and Railroad Tacks.....	90¢-57½¢
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Hungarian Nails.....	85%
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Finishing Nails.....	70%
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Trunk and Clout Nails.....	80¢-45%
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NOTE—The above prices are for Standard Weights. An extra 5¢ is given on Medium Weights, and an extra 10¢-5¢ is given on light weights.	
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Miscellaneous—

Double Pointed Tacks.....	90¢-57½¢
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Steel Wire Brads, B. & E. Mfg. Co.'s list.....	50¢-10¢-60%
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See also Nails—Wire.	
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Tanks, Oil—

Emerald, S. S. & Co.....	30-gal. \$3.40
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Emerald, S. S. & Co.....	60-gal. \$4.25
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Queen City, S. S. & Co.....	30-gal. \$3.65
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Queen City, S. S. & Co.....	60-gal. \$4.50
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Tapes, Measuring—

American Ases' Skin.....	50¢-50¢-10%
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Patent Leather.....	25¢-30¢-5%
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Steel.....	40¢-10¢-10%
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Chesterman's.....	25¢-25¢-5%
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Eddy Ases' Skin.....	40¢-10¢-50%
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Eddy Patent Leather.....	25¢-30¢-5%
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Eddy Steel.....	40¢-10¢-10%
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Keuffel & Esser Co.: Favorite, Ass Skin.....	40¢-10¢-50%
Favorite, Duck and Leather.....	25¢-30¢-25¢-10%
Metallic and Steel, lower list.....	35¢-35¢-5%
Pocket.....	35¢-35¢-5%
Lufkin's: Asses' Skin.....	40¢-10¢-50%
Metallic.....	30¢-30¢-5%
Patent Bend, Leather.....	25¢-50¢-25¢-10%
Pocket.....	40¢-40¢-5%
Steel.....	33¢-40¢-35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ½-inch and larger... per 100 lbs.	\$3.00
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Thermometers—

Tin Case.....	80¢-10¢-80¢-10¢-5%
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Ties, Bale—Steel Wire—

Single Loop.....	80¢-2½¢
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Monitor, Cross Head, &c.....	70%
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Brick Ties—

Niagara Brick Ties.....	25¢-10%
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Tinners' Shears, &c.—

See Shears, Tinners', &c.	
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Tinware—

Stamped, Japanned and Plated, sold very generally at net prices.	
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Tips, Safety Pole—

Covert's Saddlery Works.....	60¢-10%
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Tire Benders, Upsetters, &c. See Benders and Upsetters, Tire.	
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Tools—Coopers'—

L. & I. J. White.....	20¢-20¢-5%
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Hay—

Myers' Hay Tools.....	50%
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Stowell's Hay Carriers.....	50%
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Stowell's Hay Forks.....	50%
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Stowell's Fork Pulleys.....	50%
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Saw—

Atkins' Cross Cut Saw Tools.....	40%
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Simonds' Improved.....	33%
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Simonds' Crescent.....	25%
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Ship—

L. & I. J. White.....	25%
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Transom Lifters—

See Lifters, Transom.	
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Traps—Fly—

Balloon, Globe or Acme, doz.	\$1.15¢-1.25¢; gro. \$11.50¢-12.00¢
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Harper, Champion or Paragon, doz.	\$1.25¢-1.40¢; gro. \$13.00¢-13.50¢
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Game—

Oncida Pattern.....	75¢-10¢-75¢-10¢-5%
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Newhouse.....	45¢-45¢
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Hayward & Norton.....	70¢-10¢-70¢-10¢-5%
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Victor and Oncida.....	70¢-10¢-70¢-10¢-5%
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O. C. Jump (Blake Pat.).....	60¢-50¢-10%
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Mouse and Rat—

Mouse, Wood, Choker, doz. holes	84¢-9¢
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Mouse, Round or Square Wire, doz.	85¢-90¢
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Marty French Rat and Mouse Traps (Genuine):	
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No. 1, Rat, each \$1.21; 1 doz.	\$13.25
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No. 3, Rat, 1 doz.	\$4.50; case of 50 \$75.75 doz.
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No. 3½, Rat, 1 doz.	\$5.25; case of 72 \$37.80 doz.
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No. 4, Mouse, 1 doz.	\$3.85; case of 150 \$57.75 doz.
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No. 5, Mouse, 1 doz.	\$3.00; case of 120 \$36.00 doz.
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Trimmers, Spoke—

Wood's E. L.....	50%
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Trowels

Diston Brick and Pointing.....	30%
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Diston Plastering.....	25%
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Diston "Standard Brand" and Gar- den Trowels.....	35%
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Kohler's Steel Garden Trowels, 5 in.	
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Kohler's Steel Garden Trowels, 6 in.	gro. \$4.50
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Never-Break Steel Garden Trowels.....	gro. \$6.00
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Rose Brick and Plastering.....	25¢-5%
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Woodrough & McParlin, Plastering.....	25%
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Trucks, Warehouse, &c.—

B. & L. Block Co.: New York Pattern.....	50¢-10%
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Western Pattern.....	60¢-10%
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Handy Trucks.....	1 doz. \$16.00
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Grocery.....	1 doz. \$15.00
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Daisy Stove Trucks, Improved Pat- tern.....	1 doz. \$18.50
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McKinney Trucks.....	each \$10.00
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Model Store Trucks.....	1 doz. \$18.50
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Tubs, Wash—No. 1 2 3	
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Galvanized, per doz. \$4.25 4.75 5.25	
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Galvanized Wash Tubs (S. S. & Co.): No. 1 2 3 10 20 30	
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Per doz., net \$5.75 6.30 7.20 6.60 7.20 8.10	
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Twine, Miscellaneous—

Flax Twine: BC. B.	
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No. 9, 1½ and 1½-lb. Balls, 22¢-24¢	
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No. 12, 1½ and 1½-lb. Balls, 18¢-20¢	
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No. 18, 1½ and 1½-lb. Balls, 16¢-18¢	
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No. 24, 1½ and 1½-lb. Balls, 16¢-18¢	
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No. 36, 1½ and 1½-lb. Balls, 15¢-17¢	
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Chalk Line, Cotton ½-lb.	
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Balls.....	31¢
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Cotton Mops, 6, 9, 12 and 15 lb.	
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to doz.....	10¢-12¢
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Cotton Wrapping, 5 Balls to lb., according to quality.....	1½¢-2½¢
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American 2-Ply Hemp, ¼ and ½-lb. Balls.....	18¢-14¢
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American 3-Ply Hemp, 1-lb. Balls.....	18¢-14¢
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India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....	9¢-4¢
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India 3-Ply Hemp, 1-lb. Balls.....	8¢-4¢
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India 3-Ply Hemp, 1½-lb. Balls.....	7¢-8¢
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2, 3, 4 and 5-Ply Jute, ½-lb. Balls.....	9¢-10¢
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Mason Line, Linen, ½-lb. Balls.....	4¢
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No. 264
